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THE NOR-WEST FARMER.

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LIVE STOCK.

Our Illustrations.

Montrave Maud, foaled in 1885, is a conspicuous member of the most successful Clydesdale families in Scotland. Her dam, Moss Rose, was awarded the Cawdor Cup at Aberdeen Highland Society's show in 1894, as the champion female, and her daughter, Montrave Maul, was reserved for the same honor, as well as champion of the female classes at the same show, where Queen of the Roses, another daughter of Moss Rose, was also at the head of her class. Many other honors have been won by these three great Clydesdales. Maud was winner last spring of the \$260 challenge cup at Glasgow and the Ayr cup at Ayr. She is by the famous Prince of Wales (673), and owned by the well-known Clydesdale breeder and fancier, John Gilmour, of Montrave. Her son, Montrave Mac, is one of the most promising of the younger Clydesdales.

Earl of Arran, 3-year-old ram, is a typical representative of the Scottish Blackface breed of sheep, and was winner of the first prizes at Kilmarnock and Glasgow in 1896, as well as of the Glenbuck medal at Glasgow as the best ram of the breed.

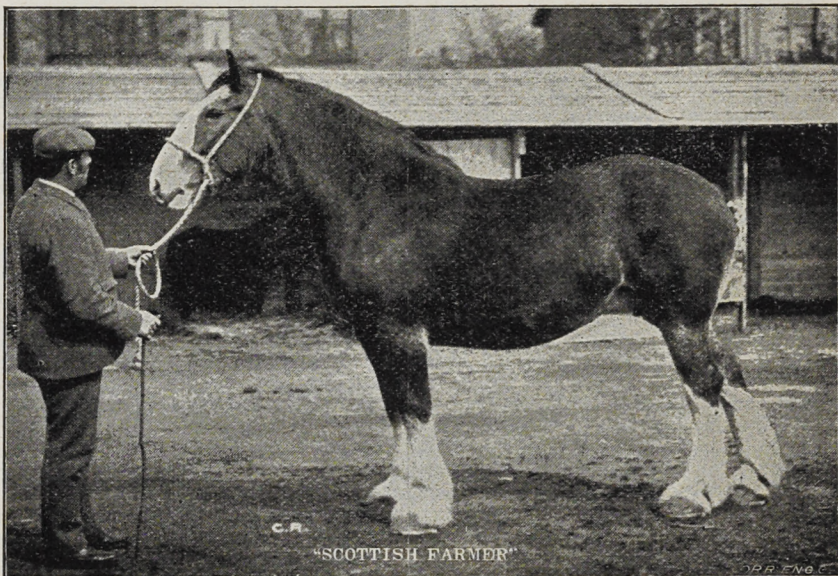
Ayrshire Cows.

Dairy husbandry and the breeding of Clydesdale horses are the leading specialties of the farmers of the southwest of Scotland, and Ayrshire cows are the special dairy breed. But there has of late years grown up a pretty strong divergence of opinion as to the particular style of animal that constitutes the ideal dairy cow. This fall the rebellion against the showyard type has broken out more strongly than ever before, and men whose opinions are entitled to great weight have set down the fancy Ayrshire that takes the prizes at the shows as little better than a fraud when looked at from a business point of view. There are thousands of capable dairy farmers in the neighborhood of large towns especially, who can be very well trusted to find out the kind of cow that it will pay them to keep, and these men would no more think of buying a showyard specimen as a milker than they would think of hiring a drawing room belle as a dairy maid. The showyard Ayrshire is delicate and unprofitable, and quite out of the running for the making of milk and butter, and the latest deliverance on the matter is that of Mr. McNeillage, editor of the *Scottish Farmer*, who, in a lecture before an audience well fit to judge of the soundness of his views, undertook to set forth the kind of type and management likely to bring the highest reliable profits. Several years ago the Fairfield Farming Co. was started to supply a high class quality of milk for consumption in the city of Glasgow. Its manager is well-known, and it is to his stock and his opinions that Mr. McNeillage goes for object lessons. What is sound teaching there for Ayrshires must be pretty safe teaching here also, for the men who are on the lookout for an ideal dairy cow.

AN IDEAL, AYRSHIRE.

"The cow I am about to describe is neither a vision nor a dream. She exists to-day, and her achievements can be tested and verified by anyone who cares to pay a visit to the Fairfield Farming Co.'s establishment, near to Kippen Station. This cow, a fortnight after calving, weighs 10 cwt. She measures round the chest, behind the shoulder-blades, 6 ft. 1½ in.; and across the chest, from point of shoulder-blade to point of shoulder-blade, 22 in. She is between five and six years old, and at the present time is yielding an average of from 30-31 lbs. milk in the morning, and 26-28 lbs. in the evening. Mr. Drysdale has kindly given me a description of the kind of Ayrshire which pays him best. She is a cow standing on moderately short legs, widely set, and fine in the bone, with a good, clean neck and shoulder, wedge-shaped at top—that is, with no superfluous beef and muscle; well arched in the ribs, with plenty of room in the chest. A flat-

ceded as eminently desirable in the Ayrshire cow. Unfortunately some of them can be simulated, and the manufacture of fashionable horns is one of the fine arts in the Ayrshire world. How long the system of making horns with the aid of pulleys is to be tolerated by agricultural societies one cannot say. That it has sold many an unworthy specimen which other wise would have been discarded by all fanciers cannot be denied, but the use of pulleys is not so easily detected and put down as some of the other practices against which agricultural societies have in recent years resolutely set their faces. But to return to our ideal cow. We have now to hear what Mr. Drysdale says about her milk vessel. This is the crucial point in the show Ayrshire of the milk stock, and it ought to be of value to know what an expert like the manager of Fairfield says about it. The vessel should be capacious and well shaped; carried tight to the belly, wide below, and carried well forward. A good fore vessel is an



CLYDESDALE MARE, MONTRAVE MAUD (11786).

ribbed animal is never a good feeder, and, consequently, never a good milker. The cow should have a straight back, wide at the tores, with strong, deep thighs and deep flanks; a small, thin, long tail, rather than a coarse tail, as cows with the latter caudal appendage are seldom good milkers. A thin-skinned animal, with a yellow tinge in the color and mellow and loose to the touch, is almost invariably profitable in a dairy, yielding a large supply of milk showing a good percentage of butter fat. The head of a dairy cow should be carefully studied—blocky, wide between the eyes, and not too long between the eyes and the nostrils, and wide also between the nostrils. A long narrow face is a common accompaniment of the narrow chest and flat ribs. The horns should be widely set, with an upward tendency; and the eye, as Mr. Alex. Wilson said last week, should be bright and clear. The peculiar facial expression and bright eye common to the good nurse of all species is easily recognized in the Ayrshire, and is an unfailing index to her milking properties. These points will be generally con-

almost unfailing index of a cow that will pay all along the line, but a cow which carries a shapely vessel when yeld is seldom a good milker. A thick, fleshy vessel is always to be suspected, and generally avoided, and in judging two-year-old and yearling queys attention should be directed to their probable future usefulness as dairy cows, and not to fancy points peculiar to a fancy race called yeld stock. Judges should endeavor to discover the appearance of vessel and teats in young cattle which subsequently become useful dairy cows, and prizes should be awarded to the young stock which possess these characteristics. If the Ayrshire were a beef breed it would be wise to ignore the formation of the lacteal organs in the younger stock, but so long as the leading place as a dairy cow belongs to her, utility at the pail should be the judge's guiding star from the moment the calf is dropped."

"I have been describing the vessel in a general way, but now let us get to facts and figures. Observe the cows being dealt with are profitable dairy cattle, yeld-

ing at the present time from 23 lbs. to 34 lbs. of the lacteal fluid at a milking. Immediately before being milked in the morning—that is, after being milked dry the previous evening—the vessel of the one cow measured 34 in. in length from the neck of the vessel in the rear to the front of the vessel, and 32 in. from flank to flank. The vessel of the other cow, under exactly similar circumstances, measured 34 in. in length, and 30 in. from flank to flank. The former, at the milking which immediately followed the measuring, gave 34 lbs., and the latter 28 lbs. of milk. The average measurement of the vessels of these and similar cows some little time after calving, and when newly milked, is—length from 26 in. to 28 in., and the width and depth from flank to flank 30 to 32 in. These figures will be a better guide to those studying this question closely than general statements about having the vessel carried well forward and gripped well up. They indicate what really useful vessels should be like. After the vessel come the teats, and here the battle between fancy and utility was wont to rage with all but unabatable fury. Thanks to persistent and dogged condemnation on the part of those who had to milk the cows, the small teats which came in with the tight vessel, as Woolfords told us, have either gone, or are going very fast; but if Mr. Hamilton's theory is sound—that the tight vessel and small teats are concomitants—it is pretty obvious that vigilance will require to be exercised if the door is to be kept shut. But first of all let us look at the position of the teats on the vessel. They should be placed well under, not on the outside, because when planted in the latter way it is difficult for the milker to draw the milk from the off-side teats into the luggie without losing some. This is a practical point which is seldom lost sight of, but when we come to the size of the teats differences emerge. There are two extremes here, and the one is almost as bad as the other. Teats which are too large are objectionable, because, as a rule, they are tough to milk, and being so, the cow is seldom milked clean, with the result that she goes sooner dry. The same objection applies to tapering teats (and very long teats are usually tapering) they are tough to milk, the cow goes off sooner, and Mr. Drysdale estimates that during an ordinary milking period of from nine to ten months a cow with tough teats will yield about one-fifth less milk than one more easily handled. Experience shows that a cork-shaped teat blunt to the point, and measuring when at rest about 2½ in., is a nice medium; in the hands of the operator such a teat distends to about 3 in., the width of the average hand of a woman. It is just possible that some may doubt the accuracy of the figures and other details now quoted, but those who do so will not have visited Fairfield, I have said elsewhere more than once, and I repeat it again—anyone who is really anxious to see the Ayrshire breed at its best as a factor in the commercial side of farming has not exhausted the field until he has visited Fairfield. The mean-looking wretches, so vigorously satirised by the recent speakers on this topic, are there conspicuous by their absence, and the result of having their room better occupied is to be seen by what follows.

In the genial climate of the West of Scotland an autumn calved cow liberally fed all winter, and put on rich pasture in summer, will give far more milk than is possible under ordinary conditions, but every cow on that large and profitable dairy farm has a separate record, and the quality as well as the quantity is carefully taken note of. Of 20 cows, whose record under these favorable conditions was given by Mr. McNeillage, the first made from 75 weeks' continuons milking 1,416

gallons of milk, weighing rather more than 10 lbs. to the gallon. Another in 63 made 1,427 gallons, and another 1,371 gallons in 64 weeks. The five months' yield ran from 697 to 528 gallons. The cow that gave 697 gallons in five months made 1,098 gallons in 38 weeks, and her milk shows 5.50 per cent. of butter fat. This, by the way, is something that the men who milk their cows four times a day to secure big records should have their attention drawn to. It is true that these cows are fed at high pressure. "It may be asked," says Mr. McNeillage, "Is not this high pressure sore on the cows, and would not less pay quite as well? The answer to that is, that given good constitutions and judicious feeding, the treatment of such cows need not have any bad effect. Most of the cows specified in the above tables are now in stock at Fairfield. One of the best is seventeen years old, and a strong, vigorous, healthy animal. She has been eleven years in the stock, and is a grand representative of what can be found in the Ayrshire breed by those who look wisely for them. Others referred to are cows from ten to twelve years old, and all of them are sound, big, open cows, such as were described earlier in this paper. Such cows are worth from £5 to £10 per annum more to their owner, and will eat no more than the wastrels of which so much has been heard. In the auction mart the fancy "scrubs" sell at from £9 to £13 apiece, while the good commercial sorts can always command from £16 or £18 and upwards."

In the six summer months May to October inclusive, an ordinary herd of 36 spring-calving Ayrshires made an average yield of 4,827 lbs. per head. A showyard and prize winning herd, referred to by Mr. McNeillage, made from 22 to 30 lbs. a day for eight months, the best milker in the prize herd making 732 gallons against 1,014 gallons made by the best cow in the Fairfield commercial herd in the same time. The way the Fairfield herd was brought up to its present high standard was by buying to start with the best cows within reach, testing these for continuous production of both milk and butter, and keeping only the calves from the cows making the best tests, resulting in a very high test of milk up to date. This result has only been attained by the exercise of great care and scrupulous attention in the selection of bulls, and no sire is used without every inquiry being made as to the milking records of his female ancestry.

"The great defect," says Mr. McNeillage, "in the Ayrshire Herd-Book is that it affords the breeder no help at all in this matter. What is wanted is, along with the pedigree in the accustomed form, particulars of the milking records and butter fat tests of the dam and grand-dam, and further back, if that be possible, of every bull in the register. This would serve a dual purpose—it would place at the disposal of the breeder a weapon whereby he might improve his stock in genuine dairy properties, not in quantity without quality, nor in quality without quantity, and it would vastly enhance the value of the Ayrshire in the foreign market."

What Mr. McNeillage has to say as his own opinion is in entire accord with the teaching of such men as Prof. Haecker, who call for the combination of type and performance in the selection for an ideal dairy cow. The type and the performance within no long period are found in very decided accord.

"The best milking members of all breeds have certain characteristics which easily distinguish them from their neighbors. Going through several of the best Aberdeen-Angus herds during the past four years, I never had any difficulty in identifying the members which gave most milk. The wedge-shape, the clear eye, the

BREEDERS' DIRECTORY.

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Agent for Manitoba and North-West.

sharp shoulder, and the small neck, are an infallible index of a cow which yields more milk than her fellows. Frequently such cows in beef breeds nurse two calves instead of one, and while none of them exhibits the wedge-shape as it is seen in the Ayrshire, they do exhibit it in quite a recognizable form. As the chief duty of the Ayrshire is, however, to produce milk, the wedge type has been deliberately arrived at in her breeding. Along with that stamina must be looked for, and vigorous digestion is one of its chief characteristics."

The management of the Fairfield cows is as follows: Most of the cows calve in autumn, from August onwards, and are supplied with as much aftermath in the shape of second and third crop Italian grass, and, later, with as much tares as they can eat, together with six lbs. of bean meal and a little brewers' grains daily, but divided into two meals. This lasts until the end of October. From that date until about the third week in December cabages take the place of the grass and tares. From this date onwards, until grass comes, the real winter ration is in force. It consists of six lbs. of bean meal and two lbs. of crushed oats or barley meal, and a little draff given in three diets, but well scalded and mixed with chaffed bean straw, and pulped swedes thoroughly steamed and cooked; 14 lbs. of timothy hay given in two portions, and 56 lbs. of swedes given in two portions—namely, after the of course, is the diet for a cow in full milk, and at no time does it cost more than 32c. per day, even if all has to be bought. As, however, the greater proportion is produced on the farm, the actual outlay is less. The ration is gradually reduced when a cow comes to within four months of calving, and when she is from two to three months from calving she is put dry about the month of May and turned out to poorer pasture. Those four or five months from calving when grass comes fresh are sent to the high-lying farms rented by the company, where they are milked up to within two or three months of calving, but get nothing but what they gather. Bean straw when chopped and steamed makes excellent food, and goes to swell the bulk, which is very essential in feeding dairy cattle. After the high pressure of the winter it is found to be a wise policy to give the cows a short rest in summer, when they can be kept at a low rate, and milk is plentiful and cheap. This policy is the key to the success at Fairfield, illustrated in the very low death-rate. During the seven years beginning 1890 the average head of stock under Mr. Drysdale's care has been 136 milk cows per annum, exclusive of young stock. All the best are regularly brought round and calved, and any unsatisfactory cattle are fattened off, others being bought to take their places. The average death-rate during these seven years has been four cows per annum. In 1890, 1892, 1894 and 1896 there were only three per annum—a very low death-rate, indeed, considering the date when they are calved, but none were due to the high pressure feeding. In 1893 and 1895 there was a slightly heavier death-rate, due to several of the cattle, immediately before calving, eating acorns and other indigestible matter. After these details have been reflected on, it will readily be admitted that the evidence afforded by Fairfield of the value of the Ayrshire is even more striking than appeared at first sight.

It should be understood that, though some of the records quoted show long milking periods, they are not brought forward as the best way to handle cows. The average milking period should be 10* or 11 months, with six weeks' dry before calving.

Advertise in The Nor'-West Farmer.

Feeding Straw.

A Western reader complains that at present prices for beef he can take no money out of feeding steers, and has about made up his mind to sell next fall to the western ranchers. Meantime, he proposes to keep what he has over the winter in such condition that he may turn them out on the grass with a good chance of their getting to be good beef next summer. He wants, meantime, a few pointers on feeding straw, to see if he can winter his stock without having a serious loss in condition. This questioner opens up a pretty wide field, that is of thoroughly practical interest to every stock grower here. Let us deal with straw feeding to begin with. A donkey of more than average insight once remarked that straw is very fair feed—when you have no hay-stack, and, hay or no hay, a lot of value can be taken out of good straw. What makes it good? Ripe straw is very poor feed because the nutritive matter in it has been changed to woody fibre. Nature has worked up all she could of the strength of the plant into the grain on the top

forming matter in the food consumed.

Scotch feeders have always preferred oat straw, and they were right for two reasons. The crop was generally cut rather greener than other grains, and chemical analysis goes to show that there is nearly double the fat and one per cent more protein in oat straw than there is in wheat or barley. Good pea straw is worth double of wheat, and bean straw, which we cannot well grow here, has three times the protein of wheat straw, is, in fact, equal to the best hay. In our healthy climate much profit can be taken out of straw by stock, but this year's crop must have been greatly reduced in feeding value by rust. Poor grain and poor straw, and a good deal less of it, is the sure consequence of rust, and, if so, barley chop may be indispensable, if the herd is to be kept in fairly thrifty condition on this winter's straw. Such is the teaching of both science and experience, and every man must judge for himself as to the profit from giving a little chop now and then.

There was a fairly good boom in beef at 4 cents, but in this country, where so little value is put on the manure, the re-



BLACKFACE RAM, EARL OF ARRAN.

which contains the seed for next season's growth. But if the straw was green at the neck when the crop was cut, there was still a fair amount of nutritive matter in it, the greater proportion of which was carbo-hydrate, or heat-producing, and that is the least valuable constituent. There is some protein or flesh-producing matter, but not enough to enable the beast, out of all the straw it can eat, to make any gain in flesh. But if the grain was cut on the green side, which is the general rule here, and there were green second-growths, there was more flesh-forming matter, and the condition of the stock so fed will be correspondingly improved.

But a straw-wintered steer does much better at the stack than if fed any other way. He digs into the bottom of the heap for the chaff and lost grain, and if the thrasher was making a big record he would waste enough grain to help out the steer very materially. For this reason mainly the steer that runs out keeps in better heart than if fed straw in a stable, with all the grain and chaff left in the field to go to waste. One cent's worth a day of chop fed to a beast along with straw will help him a lot, as it brings him nearer a "balanced ration," as the scientists call a proper proportion of flesh and heat-

turn from feeding for beef can hardly cover any more than the market value of the feed of the stock and the man who attends them. The wages for his winter's work must be very slim, but is still preferable to chopping in the bush.

The feeding value of any thing that grows depends a good deal on the soil it grows on. We have not got down to that point here yet, but will find out some day, just as stockmen in the old country have done. Stock from one district or farm in a district is worth more than any other, just because experience has shown the buyers that they are "good doers" wherever they may afterwards be taken.

CONSUMPTION CURED.

An old physician, retired from practice, had placed in his hands by an East India missionary the formula of a simple vegetable remedy for the speedy and permanent cure of Consumption, Bronchitis, Catarrh, Asthma, and all Throat and Lung Affections, also a positive and radical cure for Nervous Debility and all Nervous Complaints. Having tested its wonderful curative powers in thousands of cases, and desiring to relieve human suffering, I will send free of charge to all who wish it, this recipe, in German, French or English, with full directions for preparing and using. Sent by mail by addressing, with stamp, naming this paper. W. A. NOYES, 320 Power's Block, Rochester, N.Y. 1842

Smithfield Show.

This the great final fat stock show of Britain was held at London in the second week of December. It was the 98th national show held at the same place. Those were the days of monster specimens, and at the first show a Hereford bullock stood 7 ft. high and weighed 4,100 lbs. A first prize bullock was 4,200 lbs, 8 ft. 11 in. long, 6 ft. 7 in. high, and 10 ft. 4 in. girth. Nobody thought of killing an ox in those days till he had done some years work at the plow, and for females, only cows that had borne three calves were eligible as competitors. Animals intended for show had then to travel all the way on foot, and as Shorthorns were then bred mostly in the north of England they rarely competed. About 1850 an ox could compete if not more than five year old; now the champions are under three. As a rule, the "crack" animals attend Birmingham or Norwich shows sometimes both. The Scotch generally manage to pick up a big share of the good things going, and this year about all the champion honors went to cattle bred in the far north of Scotland. Minx of Glamis, a Polled, bred by and property of the Earl of Strathmore, Glamis Castle, Forfar, age 2 years 11 months 3 weeks, weight 1,800 lbs., was the winner of first in her class, the Breed champion cup, the £50 as the best heifer of any breed, Her Majesty's \$750 Challenge cup as best bred by exhibitor, and the \$550 Champion plate as the best animal in the show. She was sold for \$650. The reserve for best animal in the show went to an Angus-Shorthorn steer shown by W. E. Learner, Norwich. He was 2 years 8½ months old, weighed over 2,000 lbs. and was bred in Rosshire. He was champion steer, as well as first in his class. An English bred Hereford was put next him for the same honor. A-Hereford, owned by the Queen, very nearly won another championship. The champion of the Hereford breed was Banker, champion also at Norwich and reserve at Birmingham for the same honor. The Herefords were a specially good lot, and the Queen had one first and one second, with a steer that some judges at Smithfield would have preferred to the champion of his breed. In Shorthorns, first went to J. Douglas Fletcher, Rosshire; second to the Queen, and the female championship went to Proud Madam, Aberdeenshire, bred and owned by the Earl of Roseberry. In Polled Angus there was keen competition between Minx, the champion of the show, and a Ballindalloch female, Mantlet. Minx was first as a yearling; Mantlet first at Inverness. Galloways and Highlanders were excellent, and the first honors went to English feeders of Scotch bred cattle. In the carcass competition Douglas Fletcher's steer was first, closely run by a Welsh steer, but in this class also Scotch breeders got most of the prizes, three falling to Galloways.

Dairy Commissioner Robertson says: If cattle are to be slaughtered and the meat prepared for export in Canada, the time required for transportation across the ocean would be barely sufficient to properly cure and ripen the meat, to bring out its flavor and leave the flesh tender. When suitable conditions of temperature are provided in cold storage chambers on the ocean steamships, the carriage of dressed meats from Canada to Great Britain, instead of being an injury to the quality, would be an assurance that they would not be offered to the public for consumption in the tough, rather limp, and unsatisfactory condition of meat eaten too soon after the killing.

Productive Sires.

Clement Stephenson, one of the most successful breeders of Angus cattle in Britain, gives this advice to breeders:

"A really good bull will make a herd even from moderate cows, whilst an inferior bull will ruin a herd regardless of the high qualities of the cows it may contain. Those who intend to start a herd should, in my opinion consult some one who is quite familiar with the breed; of course, the man who has a natural eye for cattle can easily pick out the good sorts; but there is more than this required if the new herd is to be a success.

"There is a family history to consider. Were the ancestors of the animals it is proposed to buy all good ones? Were they regular breeders and good milkers, and were they sound and robust in constitution? These are important points, and should all be well considered, but it is only those who have made a special study of the subject who are competent to advise. Experience always comes in, but alas! it generally comes too late. It is better, therefore, for the beginner to consult an expert and pay for his advice. Or he may place himself unreservedly in the hands of a well-known breeder, but should be prepared to pay full value for good animals.

"And here let me point out the supreme importance of keeping only the best bull calves for stock purposes—by best I mean those that in the first place are good ones individually, and have in addition a good record as to ancestors and all other qualities that are not only desirable but absolutely necessary in a stock bull. The demand for small-priced (it is a mistake to call them cheap) bulls of this breed is considerable for crossing purposes, and the breeders may be tempted to keep on animals that would be worth as much, or more, as steers. This is a mistake, and the sooner both the pedigree breeder and the cross breeder realize it the better it will be for all concerned. In breeding cross-breeds the sire at any rate must be pure and good."

The Pig for Profit.

For reasons not yet explained, the best individual pigs for feeding and market are from sires and dams which are pure-bred but of different breeds. Take this one example. A cross of the Poland China and Berkshire will give better pigs for feeding than when both parents are either Berkshire or Poland China. A still better cross is that of the Improved Yorkshire upon the Poland China or Berkshire or Chester White. But these cross-bred pigs are not as good for breeders as those which have been kept strictly pure. For feeding, then, the rule is to cross the breeds, but for breeding to keep the stock pure. One of the points every skillful breeder aims at is an even, uniform lot of pigs. Such a lot attracts buyers and brings better prices. Cross-bred dams do not, as a rule, breed a uniform lot of pigs, and for this reason they are not desirable. If used, they should be bred to pure-bred sires of either one breed or the other. For instance a sow resulting from a Yorkshire crossed with the Berkshire should be bred to a pure Yorkshire or Berkshire boar, and if her sow pigs are used for breeders, a sire of the same breed should be used again—all the time breeding in line. The rule above given, however, is the correct one to follow: for breeders, keep the blood pure; for the market, cross two pure breeds.

Catarrh is a constitutional disease and requires a constitutional remedy like Hood's Sarsaparilla, which purifies the blood.

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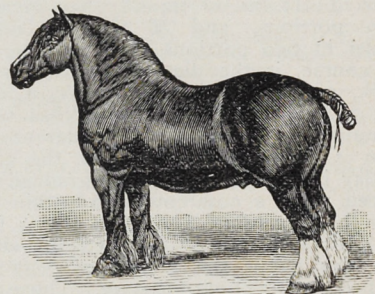
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Pig Feeding Experiments.

Two experiments in the feeding of pigs have been made by Mr. H. H. Dean, Ontario Agricultural College. The one was to determine the relative values of wet and dry meal as food for pigs, and the other to compare sweet milk and sour milk. In the first test, seven grade Berkshire pigs, averaging 141 pounds, were fed for three weeks on middlings made into a slop with skim-milk and some whole peas, and three weeks following the same food dry. The total gain per lot was 142 pounds on wet food and 171 pounds on dry food. Practically the same amount of grain was required to produce a pound of gain, whether wet or dry, but the pigs seemed to waste more of the dry food. The second test was with eleven Tamworth pigs, divided into two lots. Feeding middlings and peas, sweet milk and sour milk with some buttermilk was compared in alternating periods of three weeks. The total gain of the two lots while on sweet milk was 379 pounds, and while on sour milk 438 pounds, a difference of 59 pounds in favor of sour milk. In the author's opinion the trial indicates that sour milk is equal to or better than sweet milk for pigs weighing from 140 to 200 pounds. A somewhat novel experiment is being tried with turnips in the Ashburton district of New Zealand by Mr. Max Friedlander. He is feeding off a small paddock of turnips with about 150 young pigs and breeding sows, and the experiment so far seems to be a complete success. His plan is to fence off about an acre at a time with strong sheep netting, making a rough shelter with straw and slabs for the pigs to get into at night. When the pigs had just finished their first break, upon which they had been a month, they had cleared every root and weed out of the land, and were looking in first-class health and condition. Mr. Friedlander estimates that in this way pigs can be reared until they are four months old at a cost of not more than a penny per head per week; and by growing some peas to finish them off with, small farmers could make a very safe and profitable turn-over, and at the same time improve their land.

Sunlight.

All perhaps recognize the value of sunlight to plants but few fully realize its value to animal life. This fact is manifest in the dark barns and sheds which stand in all the farm yards. It is also manifest in absence of any discussion of the subject in the books. Several efforts have been made to determine the value of electric light in the growth of greenhouse plants, but there is certainly an open field for some energetic experimenter to determine the difference between the fattening power of animals fed in a dark stall and those fed in the full radiance of light.

The sun is the great motor of the universe. It revolves the planetary system. It gives motion to the atmosphere and the waters of the ocean. Every wheel that turns in the factory or rolls over the iron rail, or wagon road, gets its motion primarily from the sun. Every pulsation of animal life, every cell multiplication of vegetable life springs from the sun's rays. The beauty that blushes in bud or blossom is tinted by sunlight. The dynamics of plant, animal or machine owes their energy to the sun's heat. Plant life almost ceases to develop when the sun goes down. All the higher forms of animal life sink to rest with the setting sun. If the sun would set to rise no more, the plant would cease to unfold its buds, the animal would famish, and the fly wheel would run down. Air, heat and moisture are set down as the

essentials to germination, but light comes in as an essential of no less importance than either of these elements, as soon as growth begins to take place. A south-eastern slope grows larger crops of grass or trees than a slope in any other direction, and it is because the sun sheds a greater amount of light upon such slope. The southeast slope makes the best site for farm buildings. Its surface dries soonest after a rain; it is warmest in winter time, and is generally cooled by a gentle breeze during the hottest days of the summer. The influence of the sun is manifest again in rows planted north and south, or in the public highway that runs north and south.

Perhaps one of the chief reasons why cattle fed in open yards do as well as those fed in the stable is the difference in the influence of the sunlight. We feel an indescribable gloom and lonesomeness in a dark chamber. Physiologically considered this grewsome feeling must be due to the want of sunlight, because in the intense summer's heat shade becomes desirable, and it is as refreshing then as it is loathsome in days of gentler heat.

John Gould, the well-known Ohio dairy teacher, thus speaks of a dairy stable he found on one of his eastern trips:

"I was struck by what I saw this last winter when in the barn of R. W. Ellis, of Emden, Maine, the owner of a great butter producing herd, and yet who makes the greater part of it in winter. His stables run east and west, on the south side of his long barn, more than half of the siding space—window height—was sash and glass, and these in turn, to protect from the severe cold of that section were protected by large storm windows on the outside.

"Stabled with their heads to the centre, these cows on a sunny day were literally bathed in sunshine, and watered in the stable and cared for with the best of sanitation. These cows, if not turned out for weeks, were in the best of health, and were milking up to the full 300 pound high level. I had thought my own barn to be one of much sunlight, but this one was far superior in this respect."

An old horseman says: If you have a horse that refuses to go when asked, take a small rope and wrap it twice around the leg just below the knee, draw it tight and tie it. In a few minutes the horse will start. If he should show any indications of repeating the offence, repeat the dose, and he will be cured effectually.

John E. Russell says: "If you starve a well-grown, mature animal, he will be thin, weak, and unable to work; but you can return to generous diet, and put new flesh on his frame, and give the gloss of health to his hair. But a colt must be kept growing, or he loses his opportunity. Oats are the natural food of a horse; and a weanling may have from two to four quarts a day of bruised oats, and all the hay he can eat. Every breeder should be fond of association with animals; he should be a judge of form, health, and improvement, and he should understand how to handle them. There are no secrets in the horse business that men of average intelligence in regard to animals cannot at once master. Quiet, patient ways, with a low voice, and gentle, but strong hand, will teach a colt all that he needs to know.

The value of live animals imported by Great Britain for food during the past ten months was \$45,000,000, an increase of \$8,000,000 over the corresponding period of 1895. Of the 481,429 steers imported the United States furnished 339,185; Canada, 82,252, and the Argentine Republic, 59,250. The number furnished by the States was 113,500 greater than last year.

Big Sires not the Best.

A new edition of Mayhew's "Illustrated Horse Doctor" says on this subject:—"The largest equine parents do not always beget the largest offspring. It would seem that soundness of constitution had most to do in ensuring the propagation of great development, for we find that mares stout of body, and perhaps not 15 hands high, sometimes are dams of our largest colts. Such animals should be well made in every part, with large thighs and wide pelvis—the latter being important, as the pelvis, to a great extent, controls the size of the foetus. Difference of opinion exists as to the selection of the stallion. Some think that his sire should be the same size as the dam, some larger, and some smaller. To my mind, if size in the offspring is sought for there is no doubt that the stallion should be larger than the mare. Both parents should be vigorous and free from vice, and sound in constitution, bone and wind, as unfortunately the system of mating with unsoundness leads to disastrous results. We must refer also to the selection of immature parents, particularly as regards stallions, which are sometimes used at two years old—that is, before the tissues of their bodies are thoroughly developed—when they are robbed of that strength which should be given to the increase and support of a growing organism. Both science and practice have proved that to breed from animals before they are developed impedes their growth, and to force them to early development with excessive and over-stimulating food induces disease and premature old age. No horse can with impunity be bred from before five years old. The horse is a tropical animal, and is, therefore, better cherished during warm than cold weather. Consequently, the colt should be ushered into life when the days are warm, and at that period of the year when the early grass can be cropped by mare and foal alike, from pastures over which it will be able to take that exercise so necessary to its health and development. At no time should a growing horse be stinted of food; a week's bad feeding will do more harm than is generally imagined; it may stop growth, and even permanently operate in controlling its height and size when at maturity."

One of the most important lessons that can be taught to a farm colt is to walk. A dull slouching animal will be hard to teach this necessary accomplishment, but the duller can be made more of than is generally believed. One of the first things is to get it to "feel its oats." A cow diet will make a covey horse, with a dull walk and a weary looking wiggle when forced to a trot. Blood will, of course, tell, even if a colt has been poorly fed, but oats at the foundation is the best help to a spirited movement on the part of any horse, old or young. The next thing is to put it alongside an older horse, from which to learn its paces.

Feed Enough.—Feeding is like keeping up a fire. Insufficient fuel is simply waste for one may burn up the whole wood pile, or all the coal in the cellar, and never get warm; but, with the good fire, one is warmed and cheered, and gets the good of the fuel. So one may keep the flock just alive, and never get one cent's worth of good out of the whole winter's feeding. The liberal soul is made fat, we are told, but the other kind of man is skin and bone and his pocket is empty, especially if he be a shepherd. Of course, it should go without saying that as four-fifths of the food is consumed in keeping an animal warm, good shelter is equivalent to so much food. Thus the old adage is justified, that a pine board is the best of feeding.

Band, Herd and Flock.

J. E. Marples, of Deleau, has purchased a young bull at a good figure from the champion Herefords of Ingleside, Compton, Que. This young bull is one of the best ever raised at Ingleside; sire Pinkham, of Ingleside; dam, Spot 3rd, champion, 1894, and should be heard from again.

The cattle most popular in New South Wales for dairy purposes are called the South Coast breed originally a cross between the Shorthorn and the Ayrshire, which, through careful selection, have now become a distinct breed, having its own herd book. It is good for both milk and beef.

At a recent meeting of the American Wool Growers' Association the president said that he was wintering his lambs on oat straw, and that he had never seen lambs do better. "But," he added, "I forgot to thresh the straw, and possibly that has something to do with it." It would be good for a lot of our sheep if their owners forgot in the same way.

Amos Cruickshank, in conversation with a well-known Canadian breeder, once said: "Look well to the sire. Any young man who starts out with a good bull and continues to use only good ones, at the same time culling the females of the herd closely, will soon build up a good herd." This is one of the wise sayings that every breeder of cattle especially should fix up inside his hat.

During a recent horse fair at Wigton, a Quaker was selling a horse to a dealer. When the dealer asked if the horse was a good puller, the Quaker remarked, "Friend, it would delight thee to see him pull." The dealer bought the horse, and trying him next day, found he would not pull an empty cart, so, calling on the Quaker, he said: "I thought you told me your horse was a good puller?" "No," said the Quaker, "I told thee it would delight thee to see him pull. It would have delighted me, too, but I never had the pleasure."

Many a good country bull is half ruined by being kept about all his lifetime tied up in a stable, where sunlight hardly ever enters, and often slightly damp at the same time. A bull so kept has been known to break down, sometimes to die, if taken only a few miles on a warm day from one farm to another. No matter where stabled, or how fed, he should have sunshine summer and winter, and exercise of some kind to maintain his health and procreative powers in full vigor. It is lack of exercise and the impurity of the blood certain to follow, more than inherent ill temper, that has made many a bull cross and dangerous. Let him have exercise and company, and he will be sweet-tempered and healthy and live to a profitable old age.

Horses do not chew their food by a direct up-and-down motion. The under jaw is narrower than the upper, and when the lower jaw is raised to meet the upper, it is worked sideways, so as to grind the grain or hay between the surfaces of the opposing rows of teeth. Now the movement sideways must pull the insides of the cheeks against the outside edge of the upper teeth. To anyone who has never seen nor felt these teeth, the intensely keen, sharp condition they get in would, indeed, be a great surprise. Owing to the irregular outline of the border of the teeth, the points that form can best be described by comparing them to briars. The inside edge of the lower jaw is likewise sharp, but not near so long or keen as the upper outside edge. Sometimes, but not as a rule, they are very sharp.

Scoff and Cough.

The man who scoffs at the friendly advice, to "take something for that cough," will keep on coughing until he changes his mind or changes his earthly residence. A great many scoffers have been converted by the use of the standard cough remedy of the past half century,—Ayer's Cherry Pectoral. But some are scoffing and coughing yet. They wheeze with asthma, bark with bronchitis or groan with the grippe. Singular, isn't it, the number of stubborn people, who persist in gambling, with health and perhaps life as the stake, when they might be effectually cured of cough, cold or lung trouble, by a few doses of

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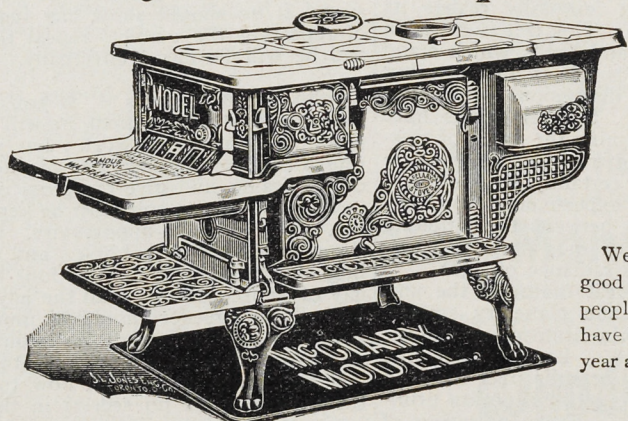
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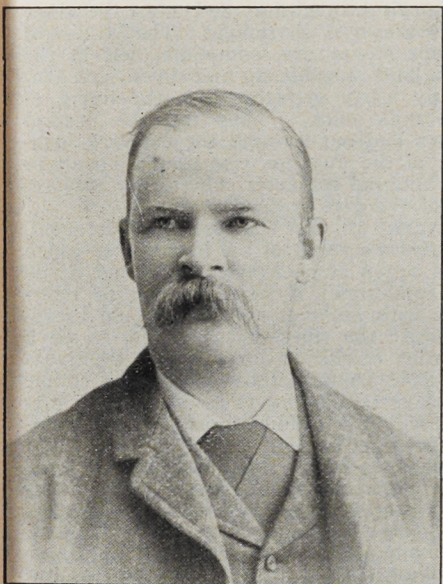
VETERINARY.

"The Cow's Udder: Its Structure, Functions and Diseases."

An address to Farmers' Institutes, by Fred. Torrance, D.V.S., Brandon.

Fred. Torrance, B.A., D.V.S., is one of the best known veterinary experts in Manitoba, and his addresses have proved about the most attractive feature at recent institute meetings. Below will be found one of these interesting papers, which should be read and thoroughly digested by every reader of the Nor'-West Farmer.

Mr. Torrance is the youngest son of John Torrance, Montreal, where he was brought up. He was educated partly at Galt Collegiate Institute, from which he went to McGill University, where he spent four years in the arts course and graduated B.A. in 1878. He next spent a year at the Ontario Agricultural College, Guelph, studying scientific agriculture, but finding his tastes lean to the veterinary profession, he entered himself at the Montreal Veterinary College, where he graduated with honors in 1882. He came west



F. TORRANCE, D.V.S., BRANDON.

in '82, settled at Brandon, to grow up with the country and has since filled a well-known place in the profession there. He has had conferred on him the degree of Doctor of Veterinary Science by McGill University.

The cow's udder is a four-fold organ, consisting of four separate milk glands placed side by side. Each of these glands is separated from its fellows by a strong partition of fibrous tissue, so that it is quite impossible for the milk of any of these glands to escape by any other than its own teat. This arrangement explains, too, why one of the milk glands, or quarters as they are commonly called, may be seriously diseased, while the other three are healthy. Let us examine one of these four milk glands and see what it is.

Structure.—If a vertical section is made through one quarter of the cow's udder, including the teat, we find at the upper part firm masses of yellowish or creamy tissue, separated from each other by bands of a white color. This yellowish part is the true gland tissue, the essential part in the production of milk. If we take a minute portion of this gland tissue and place it under a microscope, we find it to consist of little cells lying side by side about the extremities of little tubes—the

milk ducts. The whole part bears a resemblance to the branch of a tree, or to a bunch of grapes. Each grape represents the cluster of cells surrounding the end of the milk duct, which is in turn represented by the stem. The milk cells, then, are the source of the milk. Milk does not exist in the blood, but the blood furnishes the materials out of which the milk is produced by the activity of the milk cells. Once formed in the cells, the milk is poured from them into the milk duct and flows on in an ever-increasing stream to empty into the

Milk Reservoir.—This is a cavity at the lower part of the quarter, just above the teat. It is extremely elastic and capable of holding a large quantity of milk. At the upper part are seen the mouths of the milk ducts emptying into it, and, at the lower, the cavity contracts into a funnel-shaped tube passing down the teat.

The Teat is intended by nature to enable the calf to get its nourishment easily, and at other times to prevent the escape of the milk. To this end its structure is very elastic, and the milk duct which runs through it is surrounded by numerous elastic fibres, as well as by a sphincter muscle. This muscle surrounds the milk duct as a rubber band encircles a roll of paper, and its function is to prevent the escape of milk, except at the proper time. The sphincter muscle is partly under the control of the animal, which is thus enabled to oppose the efforts of the milker, and, as it is called, "hold up the milk." This annoyance may be overcome by doing something to distract the cow's attention from the effort she is making. To place the calf near her is usually effective, but other means will succeed, such as feeding her anything she relishes, placing a bag of grain across her back, or tying a cord around the body. Although the cow is able, by an effort of the will, to increase the pressure of the sphincter muscle on the milk duct, and prevent the escape of the milk, this is only possible up to a certain point. When the gland has become over-distended with milk for want of milking, the sphincter usually relaxes after a time, and the milk escapes involuntarily.

The sphincter muscle is situated, not at the external opening of the milk duct, but about an inch or an inch and a half from it. This fact must not be forgotten when it is necessary, for any reason, to pass a "milking tube," or "teat syphon." We will now consider some of the everyday diseases of the udder and teats, and first:

Inflammation of the Udder, "caked bag" or "garget." This usually appears soon after calving, and is recognized by the four symptoms which commonly accompany inflammation of any organ, viz.: Heat, pain, redness and swelling. It is usually confined to one quarter only, and, in addition to the symptoms mentioned, there is generally a diminished flow of milk, which is altered in appearance, sometimes being of a pink color, sometimes watery and full of clots of casein.

Before speaking of treatment, it may be well to say something about the causes which bring on this condition. The most frequent of these is

Overstocking.—This is sometimes produced intentionally by a designing person who wishes to give his cow the appearance of being a big milker and thus defraud the buyer. This practice is unknown in this country, as far as I am aware, but in England is frequently punished as cruelty to animals. Overstocking arises accidentally when a cow strays away and cannot be found until many hours, or perhaps days, have elapsed since milking. But the commonest overstocking is that which arises in one quarter only of a cow which is suckling a calf. If the cow has one teat which is sore, or

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more difficult to milk than the others, the calf will neglect it, and as long as he can get enough milk from the other three, will leave it severely alone. The result is overstocking of that quarter, and as it is not generally noticed in time, inflammation may result.

Next to overstocking as a cause of inflammation is taking cold. Cattle are not very susceptible to cold, but it must be remembered that during lactation, and particularly in deep milkers recently calved, the milk glands are extremely active the circulation of blood in the udder is brisk, and a cold draught that another time would produce no bad effect, may easily cause a sudden congestion of the part, with subsequent inflammation. For this reason, cows should be watered within doors during the winter season, if possible, and more than once a day. If the water can be slightly warmed, it will be found beneficial in more ways than one, in guarding against chills, and in producing more milk.

Driving cattle with dogs is another cause of garget, as also are injuries of various kinds from horns, hoofs, etc.

Another cause of garget, not so well-known as the foregoing, and not so frequent, but giving rise to an inflammation of a severe and obstinate type, is the entrance of disease germs through the milk duct into the udder. This infection may arise accidentally from the filth of stables gaining entrance to the teat through a relaxed milk duct. But the more frequent mode of infection is by means of knitting needles, quills, or milking tubes, not perfectly cleaned which are passed into the duct with the object of dilating it, or of removing some obstruction. If it is necessary to introduce any instrument into the teat, it should be scrupulously clean.

Treatment.—As to treatment of such cases I can only lay down some broad principles which can be followed in every case, and advise you, where the symptoms are severe, to obtain the services of a veterinary surgeon. The first thing to be done is to drain off the contents of the inflamed quarter as far as this is possible. Where the milk is curdled and lumpy this is a difficult task, but must be persevered with. If the pain is so great that the cow objects strongly to milking by hand, the milking tube may be inserted. These tubes can generally be obtained of veterinary surgeons, or at drug stores, and every dairyman would do well to keep one on hand. To use the tube, smear it lightly with vaseline and press it gently into the teat. After it has entered an inch or so it generally encounters the internal sphincter, and you must take care to find the centre of the opening before passing it any further, otherwise the tube might be forced through the delicate lining of the duct and cause a wound.

In some cases, when the cow has recently calved, it will be found beneficial to place the calf with her after milking the good teats. The calf will endeavor to obtain milk, and, getting little or nothing from the good teats, will devote itself to the inflamed quarter and empty it more effectually than it can be done by hand. This should only be done, however, at the outset of mild cases.

When the gland is emptied by whatever means may be employed, it should be kept empty, if possible, by frequent milkings, say five or six times a day until the symptoms have abated.

Following the milking there is nothing more effectual in relieving the pain and tension than a good large hot poultice. This may be made of linseed meal, bran, or mashed turnips, and should be large enough to retain the heat for some time. It should be changed frequently, every two or three hours during the first day.

This local treatment will be assisted by dieting the cow, so as to diminish the flow of milk, and a good dose of Epsom salts will be of benefit in this way.

In most cases this treatment will have the desired effect, and in a few days the swelling will have disappeared, and the milk will have regained its usual appearance. But where the inflammation has been of a severe type from the first, or perhaps the case has been neglected, the result may be the permanent loss of that part of the udder as a milk producer. This is accompanied by the partial persistence of the hardness in the inflamed quarter; and in buying a cow, the udder should always be felt for this hardness as evidence of former attacks of inflammation.

Lumps in the udder are always an evidence of something wrong, possibly tuberculosis, and unless positively the result of an external injury, should be deemed a sufficient reason for withdrawing that cow from the dairy, and devoting her to beef.

The teat is frequently wounded on barbed wire fences, and, if deep enough to penetrate the milk duct, the wound is difficult to heal, as the milk escaping through it keeps the wound open. Such wounds, after careful cleansing with an antiseptic wash, such as carbolic acid and water, should be stitched together. Care must be taken to bring every part close together, the part beneath as well as the skin. A milking tube must be passed so as to prevent the escape of milk through the wound, and retained in place by tapes. By these means penetrating wounds of the teat can often be healed without loss of function, although sometimes the milk continues to escape through the wound until the cow goes dry, constituting what is known as a "lacteal fistula."

Obstructions in the teats are frequently very troublesome to the milker. It may

be simply a narrowing of the duct, or "stricture." This is best treated by passing milking tubes of graduated sizes, beginning with a small size, and from day to day using one a little larger until the duct is dilated sufficiently. Sometimes these strictures require cutting, but this is a surgical operation and must be done with a special instrument. The little hard lumps like a pea, sometimes felt in the teat, and movable up and down, are generally warty growths from the lining of the milk duct. They may be pressed down and out through the external opening of the duct, or else passed up above the internal sphincter, where they may remain and give no further trouble.

Warts on the teat are very frequent, partly as a result of the irritation to which this organ is peculiarly liable, and partly to contagion. If large enough to interfere with milking, the wart should be removed; the simplest way being to tie a ligature of silk or horse hair as tightly as possible around its base, and in a couple of days to ligature it afresh, as the first one will have become loose, and so on until it drops off.

Changes in the appearance of the milk are symptoms of alterations in the function of the gland, and should be understood by the dairyman.

A pink color is an indication that there is blood in the milk. If this appears immediately after calving, it arises from an over-active state of the gland, and should be taken as a warning not to over-feed the animal. The color usually disappears a few days after calving. Pink milk at other times is an indication of congestion of the gland tissue, or of an injury to the quarter. In the latter case, the milk may contain clotted blood. Congestion of the gland, as shown by pink milk, may be the forerunner of inflammation, and means should be taken to reduce the activity of the gland. This may be effected by reducing the diet and by purgation.

A thin, watery condition of the milk may be a natural condition in a poor milker, while, where occurring in a good milker, it is an indication of catarrh of the milk ducts from taking cold.

"Stringy" milk is occasioned by the presence of mucus in the milk, and arises from the same cause—catarrh of the milk ducts.

Lumps or clots in the milk indicate local inflammation. Milk showing any of the above changes should not be used for food.

The best kind of water trough is one hung on pivots so it may be turned bottom up when not in use; then it will never get filled with snow and this will save much trouble.

Answers to Questions.

By H. D. Smith, D.V.S., Winnipeg.

As it is desired to make this column as interesting and valuable as possible to subscribers, advice is given in it free in answer to questions on veterinary matters. Enquiries must in all cases be accompanied by the name and address of the subscriber, but the name will not be published if so desired. Free answers are only given in our columns. Persons requiring answers sent them privately by mail, must enclose a fee of \$1.50. All enquiries must be plainly written, and symptoms clearly but briefly set forth.

SCOURS AND ITCH.

A subscriber in Springfield writes The Farmer:—1. I have a valuable mare that scours all the time, and I am unable to stop it. I feed nothing but dry oats and hay. She does no work. 2. Another mare has itchy skin. I gave her a blood purifier, but without apparent effect. Please prescribe.

Answer.—1. The scouring is due to indigestion or some form of irritation in the stomach. Give the mare, after due preparation, one quart of new linseed oil, and follow with tonic powders. Change food, alternating oats with bran and chopped feed. 2. Itchy skin is very often due to imperfect circulation or surfeited condition. A good purgative, followed by the following powder, tablespoonful in bran mash twice a day: Epsom salts, 4 ounces; nitrate of potash, 2 ounces; linseed meal, 4 ounces.

RHEUMATISM IN A MARE.

Subscriber writes:—"I have a mare supposed to be carrying a foal. She appears to have rheumatism in her legs. She was much the same way last spring, but got over it during the summer. Her joints are stiff, and she moves with difficulty. When resting any of her legs she holds them up off the floor. When lying she keeps putting her nose over the fetlock and pastern joints, as if suffering very much. Her hoofs are not the shape they formerly were. They do not grow forward, as they formerly did, but are growing down. Please let me know how to treat her.

Answer:—Have the hoofs attended to; cut down to as near normal condition as possible. Repeated warm fomentations to inflamed parts, followed by following, rubbed as a liniment, will give certain amount of relief: Tincture arnica, 1½ ounces; tincture opium, 1 ounce; liquid ammonia, 1½ ounces; water to make one pint. Rub well in and apply flannel bandages. Should it be rheumatism, you will find that on the slightest provocation such as change of the weather or derangement of the bowels, it will assume an acute form, appearing in different joints.

A LAME COLT.

Enquirer, Perley, Assa., writes to The Farmer: "I broke in a big boned bay colt, 3 years old, last winter, and worked him in the spring. He did a little harrowing and discing; then he began to stumble, and I stopped working him. He has run on the prairie ever since but he gets no better. Seems as if he had not proper control of his legs. When walking he drags his feet. Do you think it is his back, and will he ever get better?"

Answer:—There may have been an injury to the back, but it is rather improbable, and I would not at this stage consider the case a serious one, but rather one that would yield to careful treatment and rest. In which legs do you notice the dragging, and what is the general condition of the colt.

Sprains.

Sprains are the result of injuries to the muscles or tendons of an animal caused by excessive stretching, by any unusual and sudden exertion or motion of the limbs. Or they may be caused by long over-exertion of these parts, without such rest as may lead to the restoration of the natural condition, thus causing a change in the structure of them. Mostly they are sudden, and are easily traced to some accident or unusual exertion. For instance, an animal walking on a slippery floor, or ice, may slip and the whole weight of the body will be thrown upon one hind leg. This undue stress on the hip or stifle joint will stretch the tendons, or the muscles, to which the tendons may be attached, so severely as to give excessive pain, and a resulting lameness that may continue for days or weeks, or in fact become a permanent disability to the animal. This may happen in various ways to any one of the joints, or even to the muscles due to a sudden twist or stress thrown upon these muscles.

Of course these accidents cause a serious inflammation and soreness of the parts, and indeed they may even cause rupture of the fibres, and thus the treatment is to be studied from the precise nature of each case. At present it will be well to give some general information as to the results of these accidents as they may be called, and the proper method of treatment in emergencies, without entering at this time into the special consideration of the different forms of these injuries.

Sometimes it is difficult to locate the seat of the injury without a simple guide. This is an easy matter when it is remembered that the inflammation of the part produces considerable local excess of heat in the seat of the disease. When the part is found, it should be treated without delay, for the reason that unless immediately attended to the tissue may be absorbed, as in the case of the disease commonly called sweeney, which is a shrinking of the muscles of the shoulder, due to a severe sprain. The result of such neglect will be permanent alteration of the parts, with weakness or entire disability.

In general, the best treatment of all kinds of sprains is the application of quite hot water. This prevents the clotting of the blood in the tissues, with resulting internal suppuration and the probable formation of an abscess. The animal should be rested in such a way that the injured parts may not be moved until nature and due treatment may restore the natural condition. The hot water fomentations should be frequently repeated, and after the heat has subsided cooling lotions should be applied, which, by the rapid evaporation produced, neutralize the internal heat in the tissues. When the heat has subsided, but not before, any good stimulating liniment may be applied with moderate rubbing with the hand to excite the action of healing in the parts. This gentle rubbing is very useful, as it tends to absorption of the products of the inflammation. Bandages which produce steady and firm pressure on the parts will also be useful. These may be made of strong canvas, or cloth, wound about the joint over a sheet of cotton batting, and strongly sown with thread. This prevents settling of serum (serous infiltration) in the tissues. Rest, of course, is imperative.—Montreal Star.

For horses that rub their tail a very useful application is: One part kerosene and twenty parts of water rubbed well into the root of the tail every day for a week or two.

More farmers and better farmers will make rural districts more attractive and desirable.

Nail in the Foot.

A skilled vet. says: We know of no better remedy for nail in the foot than a flaxseed poultice. First, thoroughly wash and soak out the wound with warm water, in which is a goodly quantity of pure castile soap. If necessary, cut away some of the hoof where the nail entered to get well into the wound, as the outer portion of the hoof often nearly closes over it, if much travelling is done or much time has passed since the injury. Wet the flaxseed and boil for one hour. If the wound is an old one and much pus is discharged, coating the side of the poultice next to the wound with pulverized charcoal, the fine willow charcoal being considered the best, will be an additional advantage. It should be renewed about once in every 12 hours, and just at first it will be better to renew it oftener, and a very simple bandage will keep it on. If flaxseed is not convenient, good wheat bran may be used as a substitute until there is time to get the other. The same treatment is very good for any wound that is likely to show serious by mattering.

Winnipeg Industrial.

The annual meeting of the Winnipeg Industrial Exhibition was held on December 10, 1896, at which a very gratifying statement was presented of the year's work, showing a balance of \$1,742.65 on the right side. There was distributed in prizes \$9,738.45.

The shareholders elected the following as the new board of directors for the ensuing year:—L. A. Hamilton, D. E. Sprague, Geo. J. Moulson, D. Smith, A. J. Andrews, I. M. Ross, Wm. Brydon, Frank A. Fairchild, M. Bull, H. S. Crotty, R. H. Agur, Geo. F. Galt, J. A. Richard, J. T. Gordon, T. A. Anderson, F. W. Thompson and James Redmond. At the first meeting of the new board, D. Smith was elected president, and I. M. Ross, vice-president. The Horse Breeders' have chosen W. J. Hinman, V. S., to represent them on the board, and the Poultry Association, H. A. Chadwick. The Dairy Association, Cattle Breeders', and Sheep and Swine Breeders' will elect their representatives when they meet in February.

What is Thought of The Farmer.

John West, of Qu'Appelle Station, in renewing his subscription, says:—"I cannot do without your valuable Nor'-West Farmer, for it is the best and truest friend that enters my house."

Samuel Martin, Rounthwaite:—"The Farmer continues to be full of excellent practical information."

W. D. Ballantyne, Heaslip, writes:—"In renewing subscription, may say I like Nor'-West Farmer very much. Think it an excellent paper for the money. Wish-ing you all prosperity."

Thos. Edworthy, Calgary, wishing us the compliments of the season, says:—"Your valuable paper should be treasured by every farmer and rancher in Manitoba and the Territories."

Chas. Hoy, renewing, writes:—"Would not want to farm without The Nor'-West Farmer."

John Whitson, sr., Fort Saskatchewan:—"It is a good paper for the farmer, as it treats of so many subjects."

John K. Reid, Morris, writes re The Nor'-West Farmer:—"I would say a word of encouragement, but it might spoil you. Go on and improve it as you are doing, no fear but you will get supported."

DAIRY.

Home Butter Making.

By C. C. Macdonald, Dairy Commissioner.

INTRODUCTION.

The manufacture of butter in Manitoba has become one of the staple industries of the province and is increasing in money value year by year. But, unlike all other manufacturing, it continues to be conducted almost entirely by unskilled labor, or, at best, by persons who have had no special training for the work, and who have little or no knowledge of the constituents of milk, or of the principles involved in its care and management. In consequence of this, a large portion of the Manitoba dairy butter is of inferior quality, and often meets with such poor demand that the prices the farmers receive for their butter are far from being remunerative. There are in Manitoba over twenty-five thousand farmers, four-fifths of whom contribute something to the dairy butter supply. This wide distribution of labor is in some cases a matter of necessity, growing out of the perishable nature of milk, which prevents its being hauled long distances to central factories, as is the case with the raw material in most manufactured articles. It is nevertheless, a great disadvantage to the dairy industry of Manitoba, as it has not only prevented the employment of skilled labor, but has given the impression among farmers that little knowledge or experience is required to make butter. The result of all this is that there is no uniformity in the method practiced or in the quality of the product.

A remedy may be found in the extension of the creamery system in all communities where sufficient milk can be obtained to warrant the outlay, and there is no community in Manitoba where there should not be enough milk produced to support a creamery successfully. The creamery system will work a great improvement, as has undoubtedly been the case of the creameries already established in the province. But while there are sections where there are no creameries as yet, improvement can only come through a better understanding of the nature of milk, and the effects which different methods of treatment have upon it for butter-making.

The aim of the writer of this article is to present, in as brief a manner as possible, some of the most important facts concerning the constitution of milk, and the latest methods of treatment for butter-making from the separation of cream to the marketing of the manufactured product, believing that information of this kind will lead to the adoption of better methods than are now used, and consequently to improvement in the yield and quality of Manitoba butter.

THE CONSTITUTION OF MILK FAT.

To be a successful butter maker it is necessary that one should know something about the raw material one is handling. Milk when fresh is a thin emulsion of butter fat in a watery solution of albuminous matter, milk-sugar and mineral matter. Under the microscope it appears to be a clear liquid, in which is suspended an immense number of small fat globules that are more or less collected in groups. These globules vary considerably in size, the smallest being about one ten thousandth of an inch in diameter and the largest about one two-thousandth of an inch. The average diameter of these globules in cows' milk is about one five-thousandth of an inch. Twenty-five fat globules placed side by side so that one would touch the other would span a distance about equal to the thickness of ordinary writing paper.

The size of the globules varies considerably with different cows and with different breeds. It is characteristic of the fat globules of some breeds of cows, such as the Jersey and Guernsey milk, to be large and quite uniform in size, while those of some breeds are smaller and some are uniform and some variable. The number of globules in a given volume of milk varies greatly, according to their size and to the percentage of fat. These globules are known as cream. Milk containing large globules will cream more rapidly and completely than milk with small globules. Uniformity in the size of globules is also desirable, as globules of a uniform size will reach the surface in about the same time, if the setting system for creaming be in use. The centrifugal cream separator will be found in all cases to do the most efficient work in creaming, the principle of which machine, with full explanations, will be taken up later on in this article.

The average compositions of cows' milk is approximately as follows :

	Per cent.
Fat	3.5
Milk Serum { Nitrogenous Matter (Casein, Albumen, etc.)	4.3
{ Milk Sugar	4.5
{ Ash7
{ Water	87.0
	100

The specific gravity of fresh milk varies from about 1.030 to about 1.036, according to the amount and composition of the solids. The solids not fat, tend to increase the specific gravity, while the fat tends to diminish it; for example: milk containing a large percentage of fat will have a low specific gravity, while the specific gravity of skim milk will be high. When milk is cold it has a greater specific gravity than when it is warm. The best definition of specific gravity is, in a simple word, the density. The term density is now more frequently used by chemists than the term specific gravity, so for clearness I will use the term density here. Hence, when milk is cold, its density is greater than when it is warm, or, perhaps, a better word (meaning the same), it is thicker. Such is milk in a few sentences, as the butter maker should know it, to be successful in his, or her operations.

CREAMING.

The globules of fat above mentioned are what constitutes the cream of the milk, and to get them all out is the work of the butter maker. We have seen that they are too small to be strained out with the finest sieve. There are two methods of taking them out, namely, the natural method and the mechanical method. The natural method consists of allowing the fat globules to rise to the top of the milk by the power of gravitation. If the milk be left at rest, they will rise to the top because they are lighter than the liquid in which they float. The heavier parts of the milk are drawn down by the force of gravitation and as the serum of the milk, composed of water, casein, sugar, albumen and ash, moves downwards, it displaces the fat globules and forces them towards the top. The mechanical method is that of centrifugal force, which attains a like result. This centrifugal force is applied by means of a machine known as the cream separator. The important part of this machine is the bowl or cylinder which revolves very rapidly, the heavier parts of the milk will be forced outwards against its resisting side or inner surface with a sufficient pressure to push the lighter parts, the fat globules, towards the centre of revolution. The continual inflow of milk necessarily causes a continual outflow, thus the fat globules are separated from the milk serum. The cream separator is the most efficient method of creaming, because it takes practically all the

cream from the milk, so much so that at least twenty-five per cent. more butter can be made from a given quantity of milk by means of creaming with the separator than by any other means of creaming. The following table shows the effect of the different methods of creaming, and proving conclusively the advantages of the separator method of creaming :—

	Separator.	Deep Setting.	Shal'w Pans.
Whole milk, percent. of fat	3.67	3.67	3.67
Skim milk, "	0.08	0.52	0.48
Butter milk, "	0.18	0.24	0.22
Unrecovered, "	2.29	12.05	11.63
Pound of butter per 100lb. of fat	113.52	104.77	105.57
Pounds of milk per lb. butter	24.06	26.11	25.89
Proportion	108.52	100.00	100.85

The above is the result of an exhaustive experiment carried on at Ottawa, at the experimental farm there, covering a period of one year, from January to December.

When the natural, or setting, method is practiced, great care must be exercised in order to force all the fat globules possible to the top of the milk. The practice of leaving the milk setting in the milking pails for even the shortest time after it has been drawn from the cows, is a bad practice, and certainly means a great loss to the dairyman. The milk should be thoroughly strained and set immediately after it is milked, while it is warm from the cow. The temperature of setting should at least be to 90 degrees Fah., and a few degrees above that temperature will be all the better. The warm milk should be set in ice water, 40 degrees Fah., the colder the better to give the best results.

EFFECT OF TEMPERATURE.

If milk in a deep setting pail be left at a temperature of 60 degrees Fah., it would take the small fat globules from two to four days to get to the top of the milk, at the rate at which they would move, because, as I said before, the milk is thicker when it is cold than when it is warm. Milk at a temperature between 90 degrees and 95 degrees Fah. is slightly enlarged in bulk because it is thinner, and by putting it into deep setting cans at a temperature of from 90 degrees to 95 degrees Fah., the advantage of a falling temperature from 90 or 95 degrees Fah. to 40 degrees Fah. may be gained. That treatment will cause a more rapid upward movement of the fat globules, hence a smaller percentage of fat would be left in the skim milk. Should the milk become cooled before setting, it should be warmed at time of setting to the temperature described above. This may be done by the addition of warm water at 120 degrees Fah., adding about ten per cent. The addition of the warm water is a two-fold benefit; it both warms the milk and makes it thinner thereby hastens the raising of the cream. Milk treated as described above should throw all its cream to the top inside of fifteen hours. There are two ways of removing the cream from the milk, namely, drawing the milk from the bottom by means of a faucet in the can, and with a conical-shaped dipper; the latter is to be preferred as it is cleaner, as the sediment always found at the bottom of the can is avoided.

CREAMING WITH THE SEPARATOR.

When the separator is used for producing the cream, the milk should be strained and run through the separator as soon as it is drawn from the cows. The milk must be warm when separated, in order to gain the best results. The separator should be placed where the atmosphere is pure. When first starting the separator, see that it is perfectly level also that all bearings are clean, and all well oiled. In starting to separate first get up the required speed then fill the bowl with warm water. When the water begins to run from the milk spout of the separator, start

the flow of milk and keep it steady while the separator is running. When finished separating, after all the milk is run through, fill the bowl again with warm water to clean out all the cream and milk. The separator must be cleaned every day immediately after using, as is the case with all dairy utensils. The many advantages that the separator has over any other system of creaming makes it a most desirable dairy utensil for the butter-maker to possess, and the modern butter maker cannot, in justice to himself, do without it. Among some of its many advantages are more and better butter, which is the principal; the skim milk is perfectly sweet and much more valuable for feeding young stock than cold sour milk. Fewer utensils to keep clean, and less work for the operator consequently less labor and more money.

(To be Continued.)

Establishing Creameries.

An Institute Address by C. C. Macdonald.

There is no country on the face of the earth that has ever made a thorough success of grain-growing exclusively; but every country in the world, including Canada, has made a success of dairying or mixed farming, and has brought wealth into the farmer's pocket by that kind of farming.

I say boldly, and without fear of contradiction, that Manitoba is equally adapted for dairy farming to any other province in Canada or any country in the world.

There are already 24 creameries in this province that are doing a good paying business for the farmers, and would do a far better business if the farmers would study their own interest and keep and take better care of a better class of cows. I regret to say that the average cows kept by the Manitoba farmers are not such as will make a profit to the farmer. I feel sure, however, that the class of cows that are kept would be more profitable if they had better care. When I say better care I mean better housing in winter months, better feeding and more regularity in feeding and attendance in milking. We cannot expect a cow to give a profit if she is neglected in any way. I know that there are cows in Manitoba to-day that are called poor, unprofitable animals that, if they had a proper chance by getting humane treatment, would improve so as to become animals that would give a fair profit to the owner for the care and feed expended on them. I do not intend to go very deeply into the cow question to-day, as that is not my immediate subject. I will say this, that dairying and wheat-raising should go hand in hand. The cow should be, and must be, one of the principal foundations for successful wheat-raising. One will balance the other in more ways than one. When the wheat fails to bring in a profit to the farmer the cows will give him a profit to make up for the losses on wheat which so often occur. A good story is told in a recent publication of Hoad's Dairyman, which, I fear, in too many cases is very true. The story is of one cow that, from 1885 to 1890, produced milk and butter enough for the family use, with a sufficient surplus to buy tea, sugar and coffee for the household. During this period this mild, meek, uncomplaining cow bore four calves and 21 chattel mortgages. It is but simple justice to the poor cow to say that the proceeds of her chattel mortgages were used to pay losses in wheat-farming. Let us think of this dairy matter seriously. Gentlemen, did ever any of you ever think and figure what wonderful production the cow could give in dollars and cents if she was properly and honestly treated

with the consideration that is due her? I know of herds of cows in this province of which each individual cow is giving a gross return of from \$35 to \$50 per year to their owners, and even with this there is no consideration made for the calves they raise and the pigs that are converted into pork by the aid of skim milk, which is a by-product of those cows, and should be added as a profit from the cow.

Another reason why dairying and mixed farming should go hand in hand is, by carrying on dairying we maintain the fertility of the soil, which must be done as surely as the sun shines, or we will lose that fertility just as other countries have done and have to resort to dairying as a means to repair the damages done by continually cropping the soil, and thereby draining it year by year without putting back that which has always been taken away, viz., fertility. The most important constituents that go to make up this fertility in the soil are nitrogen, phosphoric acid and potash. Now, the comparative exhaustion of the fertility of the soil by the sale of one ton each of wheat and butter is, wheat takes 41.6 pounds of nitrogen, 15.3 pounds of phosphoric acid and 10.4 pounds of potash, while butter takes 0.5 pounds of nitrogen, no phosphoric acid and no potash. The production of butter takes practically nothing from the soil, but adds fertility to it by the addition of rich manures from the stables in which the cows are kept, while exclusive wheat-growing is a continual tax on the land, which will, sooner or later, show its disastrous effects.

Dairy farming will help in a great measure to overcome the high freight rates that have to be paid for hauling wheat to market. The cash value of a ton of wheat at present prices is about \$23, while the cash value of a ton of fine butter is about \$400, a difference in value in favor of butter of \$377 per ton. A ton of wheat, which is worth \$23, costs \$7.63 freight from Winnipeg to New York market; a ton of butter, which is worth \$400, costs \$22.50 freight from Winnipeg to the Montreal market, or, in other words, it costs only \$22.50 to ship \$400 worth of produce in the form of butter, while it costs \$130 to ship \$400 worth of produce in the form of wheat. These figures speak loudly for themselves. We should concentrate everything that is used on the farm as much as possible to save expense, for every dollar that is saved is a dollar made. Again, dairy farming will afford employment for the farmer all the year round, and the farm must be kept running all the year. If not, the farmer who owns and works is going backwards. The banks and factories are open and running all the year. If they were not, they would not be able to exist, and why not make the farm produce all the year keeping cows that will produce milk in the winter months and pay a profit after paying their way? The farmer is a manufacturer, pure and simple, and if he allows his manufacturing to be closed during the months that he cannot grow wheat, he is certainly letting them close at a great loss to himself, and when the farmers are not making money every business man in the country feels the lack of the production from the farms. Agriculture is the foundation upon which we all stand for our livelihood, without it we could not exist, hence the farms are the manufacturers upon whom everybody depends.

The dairy industry has a very bright future before it, and there is every reason why the farmers of Manitoba should feel hopeful and double their efforts along the line of this industry and increase the output of dairy products. We have new markets opening up to us every year, consequently a greater demand for food in the form of butter and cheese.

I find now and then a farmer who is

dissatisfied with cows, and who declares there is no money in the business, and who is trying to get out. The true reason is that he has not studied the business as he should do. It costs no little amount of thinking, planning, push and enterprise to get well-established in the dairy business. Dairying requires constant study and intelligent thought. No man who engaged in dairy farming for a period of two or three years, and then changed to some other branch of agriculture, because prices were low, or mainly because he did not study the business thoroughly, ever became successful at anything. The man who can successfully breed and feed a dairy cow has a mind above the average. He is a student, a keen bright business man, and you will not find this class of men dissatisfied with the dairy business. It is the class of men who are continually changing from one branch to another; men who do not do much figuring, and cannot tell you how much their cows earn individually or collectively, that say dairying does not pay. The dairy industry is all right and does pay, and will continue to do so in the future, as it has done in the past, as in the case of the eastern provinces of Canada and every other country in the world that has engaged in it.

To be successful in the dairy industry we must establish factories so that we can centralize our forces to make a uniform article of the best quality. Then we will have no trouble in finding a market for the goods. Butter made on the farm is in some cases of good quality, but hardly any two people make butter just exactly of the same quality, and, therefore, it is not uniform. These different qualities must be eventually packed together for shipment to some market, and the result is we have a variety package, and it meets with very poor demand. Now, the creamery system overcomes this difficulty. A uniform quality is produced in the creamery, the butter is shipped fresh to the markets and sells readily, and the money is brought back to the farmers' pockets, where it should be, regularly, hence furnishes the producer money to enable him to carry on his business when other products of the farm are not bringing in any money.

The first thing to be done in organizing a co-operative creamery company is to secure the assurance of the milk from at least 300 cows. It would not be wise to go on with the building of a creamery unless the milk from that number of cows can be obtained. Having made sure that there will be an adequate supply of milk, the stock may be subscribed. The shares may consist of from \$10 to \$50 each, according to existing conditions. There are generally enough farmers in a community who can pay cash for their shares to supply the money to make the first payment on the plant. Those who have little ready money can be allowed to pay a certain percentage in cash and the remainder in monthly instalments, to be deducted from their share of the creamery receipts.

Having secured enough stockholders, a corporation is formed, directors elected, and they are authorized to draft articles of incorporation and apply to the government for a charter.

The next move is to select a proper site for a building. This should be such as would secure perfect drainage from the creamery. Good drainage is indispensable, and must not be overlooked in the least degree. The site should be high and dry, so that no soakage could approach it, and every refuse of water and milk could be taken away far enough from the creamery so that no offensive smell of anything would reach the creamery or contaminate its surroundings. This is very important. See that good water is available. It is extremely important that an abundant supply of good clear water is always at

hand. Well water that is good enough for drinking will answer the purpose. Having selected a proper site, the erection of the building may be proceeded with. The foundation wall should be built of stone, and should be from 16 to 18 inches thick, and have a centre tier lengthwise and across. A building that would be large enough for from 300 to 1,000 cows should be 24 feet wide by 44 feet long in the main building; 15 ft. of this floor space should be raised about three feet above the floor of the remaining 29 feet. This raised floor is for the cream vat, and this is the part of the building where the cream or milk is taken in. On the lower floor the churn and butter-worker is placed and all the manufacturing is done. This part of the creamery should be divided into a work-room, store-room and refrigerator-room. The floors should be of $1\frac{1}{2}$ -inch board, tongued and grooved. The walls of the building should be studding 2 inch. by 4 inch, set 16 inches from centre to centre. The outside of the building should be sheathed with matched lumber and lap-siding outside of the sheathing, with good building paper next to the studding. The inside of the building should be lined with No. 1 matched lumber 2 inches wide.

The refrigerator-room should be grouted in the walls and ceiling. The entire ceiling of the building should be of matched lumber. The refrigerator-room should be supplied with an ice drum and air syphon, as shown in the last report of the Dairy association. This is the only available cold storage at the present time for a creamery, unless we have a chemical storage, which, however, is beyond the reach of any creamery, as it costs too much, while the ice drums cost but a small sum, and if properly managed will do good work.

The boiler house and engine room combined must be built. This may be a lean-to, and should be so constructed as to protect the boiler from frost in cold weather.

An ice house is a necessary adjunct to every creamery. It should be built separately from the creamery, but in such a position that the ice can be easily placed in the refrigerator-room. A house 20 feet long by 16 feet wide and 10 feet high will hold about 100 tons of ice.

Such a building as described can be erected for about \$1,000. I take this estimate from what some of the other creameries of Manitoba have cost.

The machinery for such a creamery consists of an 8 or 10 horse-power boiler, a 6 horse-power engine, both horizontal. One 400-gallon cream vat, one 400-gallon box churn, one Mason power butter-worker No. 2, one 100-bottle oil test churn, one 240-pound counter scale, one butter printer, one cream conductor, one cream strainer, one buttermilk strainer, one 200-gallon buttermilk tank, one ten-barrel water tank, one force pump, 24 feet of 2-inch shafting, 6 hangers, pulleys and belting, one butter packer, a supply of brushes, mops, dippers, ladles, butter spades, steam pipe and valves, about 30 ft. of rubber water hose and half a dozen accurate thermometers. The above apparatus can be obtained at a cost of about \$800 all told. This description is for a cream-gathering creamery. Such is the system we must follow in Manitoba until such time as the settlement is greater than it is at present. The cream is gathered from the farm dairies instead of the milk by men and teams employed for that purpose. The cream-gatherers will receive all necessary instructions from the butter-maker, who should be a thoroughly skilled man, so that he would be able to assist the patrons, and give them any instructions in producing the cream and caring for it while it is at the farm.

For a saving of money in the production of cream I would strongly advise

every farmer to buy a cream separator. These separators take from one and one-half per cent more cream from the milk than can be obtained from any other system of creaming. They cost some money to start with, but they will not be long in paying for themselves, and if they are properly taken care of they will last a lifetime. Every farmer using a separator gives a uniform quality of cream for the creamery, and a better quality of butter will be made, and that is one thing we must strive for. Make nothing but the best possible quality, and then we will have no trouble in getting a ready market and add wealth to our pocket and make us better and happier people.

Government Dairy School.

This institution has now been removed to the Henderson block, in the southwest corner of the Market Square, in the city of Winnipeg, where it will be located for the next four months. Owing to the storms and bad roads throughout the country, only twelve students came in on the opening day, but the next week will see a large addition to this number. Out of fifty applications, forty-two were from farmers' daughters. This is a most promising aspect of affairs, as it augurs that dairy reform is now likely to begin at the right place. Some of the most successful dairy teachers in England are ladies, and it is not at all unlikely that dairying will receive a fresh impetus from the increase of female students, who will soon be able to carry on with success the best kind of butter-making.

The machinery consists of the best and newest kinds required for both butter and cheese-making. The latest thing introduced is the Alpha Acme cream separator, with a capacity for 1,800 lbs. of milk per hour. The butter department also includes the Little Mikado hand separator, capacity 250 lbs. per hour; the Alexandra separator, hand power, capacity 250 lbs. per hour; No. 1 and No. 2 Daisy churns, No. 2 hand butter worker, Babcock milk tester, oil test churn, 100-gallon power churn, improved twin cream vat. For cheese-making, there are two cheese vats, one improved gang cheese press, and all the minor requisites for a first-class cheese equipment.

There is a full set of testing instruments, including lactometers, electroscopes, thermometers, etc. In a few days a new sterilizer will be installed, which will be used for the purpose of taking out foreign odors from milk and cream and destroying bacteria. The effect of this will be that the milk will keep much longer and the butter will be of finer flavor and of firmer texture.

The teaching staff is Mr. A. K. Baird, butter instructor, and Mr. A. A. Jory, cheese instructor. Lectures are delivered for an hour every morning by Superintendent C. C. Macdonald, after which the instructors take charge of the class and carry them through the practical work of the day.

The first course will be the farm dairy course, running through this month. On February 1st the professional course will start, when butter and cheese will be made each day. The two instructors have both this last year been engaged in Manitoba dairy factories, where their work has been of the very best quality. The school is fortunate in having two such bright, active young men to carry on this work.

The annual meeting of the Neepawa creamery was held on the 19th of Dec. The statement of affairs showed a product of 20,928 pounds of butter, sold at an average of a trifle over 15c. a pound. The cost of collecting and making was a shade

over 4c. The last lot brought 18 $\frac{1}{2}$ c, the average rather over 15c., and but for the urgency of the patrons to realize the return might have been a good deal better. Mr. Hamilton charged a cent less for making than his contract provided for, and but for this the return to patrons would have been only 10c. At the meeting he proposed to pay next season 11c. for the product of the season and take himself the risk of prices changing. This proposal will be voted on at a general meeting to be held in January.

The rush of new dairy inventions still goes on. The latest reported is the portable dairy, originated and patented by L. W. Beard, of Decorah, Ia. It consists of an ordinary wagon, in which has been fitted a Shipman boiler of two horse-power capacity. It burns kerosene oil and uses very little water. In connection with this is a 750-pound capacity turbine separator, and also a can for receiving the cream. This separating outfit completed makes an ordinary load for a good team of horses. By moving from patron to patron the milk can be skimmed in the door yard at each farm. The originator of this scheme claims that under the new arrangement he can pay the farmers about two cents more per pound than they are getting now for their butter. This portable creamery does away with the expense of hauling milk and greatly lessens the cost of a creamery plant.

An Iowa dairyman says: "At the bottom of all successful dairying, whether conducted entirely on the farm or partly as associated dairying, is dairy education, dairy habits, and sometimes it may be called dairy instinct. Instinct is said to be the sum of inherited habits. This is doubtless the best definition that can be given to it. Hence the best dairy communities are those where dairying has been carried on for generations. Kindness, patience, painstaking, keen observation and steadfastness of purpose are all important factors in producing good results. If dairying is not thought to be worth your best efforts, let it alone by all means. Let it alone if it is irksome to you. Devotion and application to an enterprise begets a love for it, or it should, and if it does not, there is something wrong. There is a moral side to dairying. Regular habits are required. Men who keep cows must come home at milking time; home is a good place. Very few good dairymen are whiskey drinkers. Dairying communities, as a rule, furnish but little business for lawyers. Dairying is educating and elevating, if intelligently followed."

Mr. J. B. McEwan, dairy commissioner for New Zealand, and formerly of Prof. Robertson's staff, is in Canada on his way to England, where he will spend the winter studying the markets there and in ascertaining what better arrangements can be made than already exist for the distribution of New Zealand dairy products. He states that there is a good deal of capital in the dairy business in that country and that it costs considerable to run it. The creamery business is operated by means of central creameries with skimming stations. Each factory is provided with an artificial freezing apparatus where the butter is chilled after it is made, and then taken to the public cold storages, where it is inspected, graded and reported upon by the government graders. It is then frozen and shipped in that state. The dairy products are not sold at the factories, but are all consigned to England and sold on the open market. It is claimed that this plan does not bring the maker in touch with the buyer, and one object of Mr. McEwan's visit to England is to endeavor to bring the buyer in closer touch with the producer.

Quarantine on the Boundary.

Veterinary Inspector McEachran, who has recently visited the Alberta ranches, may be relied on as a pretty accurate exponent of the views of Western ranchers on the question of quarantine regulations. The other day he said that while some of the ranchmen in the Northwest and British Columbia were afraid the removal of the quarantine would injuriously affect their business, by allowing too free importation of cattle from the south, those ranchmen who were engaged raising thoroughbred and high grade cattle were strongly in favor of the removal of the quarantine, as they believed it would open for them a good and remunerative market for high class cattle in the United States. While, therefore, there was some difference of opinion, he thought a majority of the ranchers were well pleased and satisfied with the action taken by Mr. Fisher in Washington. Speaking for himself, as a ranchman, Dr. McEachran reiterated the opinion already expressed that he thought the removal of the quarantine detention would be an advantage, rather than a disadvantage, to ranching in the Northwest.

That Dr. McEachran's views are not entirely acquiesced in may be understood from the stand taken by the Western Stockgrowers' Association at Calgary. It resolved to memorialize the Minister of Agriculture to uphold the present quarantine regulations as firmly as ever. The modification of the quarantine would not affect the customs' duties, which must stand till reciprocity is agreed on.

Tornadoes and Cyclones.

W. H. Moore, Chief of the U.S. Weather Bureau, complains that newspapers make sad confusion in their use of the above words when describing violent storms. He says the tornado is a sudden outburst of wind in an otherwise quiet, sultry atmosphere; it is ushered in by a loud, indescribable roar, similar to a continuous roll of thunder; its path is very narrow—seldom more than 500 feet wide at greatest destruction; it moves, generally, from southwest to northeast, and rarely extends more than twenty miles; it very often rises in the air, to descend again at a point a few miles ahead; it is always accompanied by thunderstorms, with often a bright glow in the cloud, this cloud has usually a funnel shape, which appears to be whirling, though some observers have described its appearance like that of a huge ball rolling forward. A tornado may be considered as the result of an extreme development of conditions which otherwise produce thunderstorms.

A cyclone, on the other hand, is a very broad storm, oftentimes a thousand miles in diameter, and sometimes can be followed half around the world; the winds circulate about it from right to left, or the way one turns clock hands backwards (in the Southern hemisphere this motion is reversed). The air pressure always falls as one approaches the center, where, at sea, there is a portentous calm, with clear sky visible at times. The cyclone winds often rise to hurricane force, but are not to be compared with the extreme violence of the tornado, before which the most solid structures are razed.

The French term "trombe" or "tourbillon" describes most exactly the tornado, which term was first applied to several squalls with funnel shaped clouds, experienced on the west coast of Africa, and which to this day, inspire the utmost fear in the minds of the natives.

Prof. Robertson, agriculture and dairy commissioner, will leave for the Territories at the end of January to confer with farmers at various places on the establishment of creameries to be managed by the government, in accordance with the terms already indicated in the circular published by him some time ago.

Influence of Soil.

A correspondent of the London "Live Stock Journal," writing on the subject of the influence of soil in breeding, furnishes the following illustrations:—Some Scotch hills have great stretches of dry hard ground with green haughs covered with short close grass at their bases. On such ground it is difficult to get black-faced wool of the right length and strength. The sheep will get "bare in coat," as the shepherds remark. The cosmopolitan Shropshire varies, perhaps, as little in fleece as any of our native breeds, but it is not exempt from influences of soil. The Lincoln, again, is notoriously sensitive in fleece. Cattle bred on the east coast of Scotland are as a rule harder in the hair than those which are bred on the west coast. The pile does not seem to vary so much as the long outer hair. But the character of the ground alters the coat most wonderfully. Highland cattle are difficult to get into coat, after they have been bred and fed for years on the fine short grasses which suit fallow deer. And not only so, but on such ground they tend to become finer in bone. Angus doddies are now often seen on the rank hillside pastures which used to be the feeding ground of Highland cattle, and one finds them on such ground with wonderful coats of hair, but with a distinct tendency towards strength of bone. It is a safe rule to leave out hard and fast lines and names when contending subjects and interests are only used to "point a moral." With regard to horse-breeding one cannot be blind to the fact that size of body and bone are more easily got on some grounds than on others. It is not to be inferred that mere size is the most supreme of horseflesh virtues. Indeed, one would be inclined to say that the big bone grown in some parts of the country has now and then more than a suspicion of sponginess.

Potash for Wheat.

In the experiments made by Sir John B. Lawes and Dr. Gilbert at Rothamstead for more than forty years, potash seems to have had no effect as a fertilizer for wheat, except when combined with both phosphoric acid and nitrogen. In the experiments now in progress at the Ohio experiment station potash seems to have no effect on wheat, whether used alone or in any combination. At the experiment station of Kentucky potash has produced a very marked increase of crop when used on corn, hemp, tobacco and potatoes; but here again it fails to increase the yield of wheat, whether used alone or in combination. The Ohio and Kentucky experiments are as yet in their infancy, and it is probable that as the soil becomes more worn even wheat will show some benefit from applications of potash; but the present indications are that this substance is seldom needed in fertilizers intended for this crop.

The cost of railroads has been largely added to by the policy of the country, which, while it encouraged the rail-maker by a duty of \$17.60 for nearly every ton of iron laid down over this broad stretch from the sea to the centre of the continent, has forever doomed the flour-maker and the farmer to pay an annual interest on this added charge. So long as grass grows and water runs, the interest must be exacted for the bonds issued for this expensive construction, and just so long will freight charges be regulated by the added cost of this construction. At the last analysis, the farmer and the miller will be compelled to pay the rates made necessary by this attempt to get rich by taxation.—Erastus Wiman in a speech at Minneapolis.

The Winnipeg City Dairymen's Union has for the second time been successful in "bursting" the city dairy by-laws. The case was argued before Chief Justice Taylor by Messrs. Martin & Mathers, solicitors for the dairymen, and the objections taken by them to the by-law were found by the judge to be well taken. What makes this defeat more humiliating to the city authorities is the fact that the objections now sustained by the Chief Justice were pressed by the Dairymen's counsel before the by-laws was passed. There is ample need for a by-law, but as great need as it should be put on a sound and equitable basis which apparently the council has failed to do in the past. It should be understood that the Winnipeg Dairymen's union is distinct from the Dairy association.

From a report of the U. S. Department of Agriculture, prepared by J. H. Monrad, we learn that in the three western states running on the same lines of longitude as our own, the dairy industry has not yet reached the rank of a successful specialty. Nebraska, with a little over 563,000 cows, with an average yield of 2,430 lbs. of milk per cow, worth 53c. a hundred. South Dakota, with 279,000 cows, averages 2,500 lbs. of milk, worth 61c. North Dakota, 146,000 cows, averages 2,300 lbs., worth 55c. Nearly all of this goes to creameries. Much of the farm butter is very low grade, taken in trade by storckkeepers, who must pay as much as a rule for poor quality as for good. The poor is shipped out in a very bad condition as "laded," and by processes only known at the factories in which it is treated, is doctored up to sell as low grade dairy at corresponding prices.

Dr. M. K. Robinson, of East Kent, England, was recently requested to investigate a sudden serious outbreak of illness in a religious house containing five sisters, a cook and a housemaid. Although no fatal results had accrued, the symptoms were severe and convalescence protracted. Five out of the seven inmates were attacked within a short period of each other, thus indicating some common origin as the source of mischief. Suspicion was attached to the milk supplied to the household, which had been taken alone, blended with tea, and in the form of blanc mange. To the morning and afternoon supply the cook had added a preservative which was found to contain, as its basis, boracic acid. A sample as delivered by the dairymen was analyzed and found also to contain a similar substance. Thus, for the same purpose, a preservative had been added both before and after its arrival at the house, by which treatment an overdose had been administered. Blanc mange made with this milk was given to healthy fowls, and one-half of them died.



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GARDEN AND FORESTRY.

Small Fruits.

In the trip made by Messrs. Stevenson and Waugh along the line of the Great Northwest Central Railway quite an interest was taken in what Mr. Stevenson had to say about small fruits, etc. The substance of his discourse will be found at page 149 of the July issue of *The Nor'-West Farmer*, and for those who file their papers (as every reader should do) for future reference, there is no occasion to repeat what was then said. In reply to questions, several minor points were brought out that are still worthy of note, even by those who have that paper by them.

Strawberries.—If possible, have rows running north and south. The Wilson, a very good and familiar variety, will grow by itself, but the Crescent, which is a finer variety, will only bear flowers, and, unless planted along with the Wilson, will prove barren. The plants should be yellowish white in the roots; if dark colored, they are old and useless. All the fruit next year will be found on the runners; the parent plants die out as a rule. To ensure the runners taking root, a bit of stone or stick should be laid on them to keep them in position, otherwise the wind may displace them. Toward the same result, hoeing among the plants should be avoided; weeds there should be hand-pulled. Between the rows may be cultivated with a horse hoe.

Black Cap raspberries may be laid down with little covering for winter, but the increased yield of fruit will much more than pay for the extra trouble of covering the whole canes carefully with earth. A covering of short straw would do, but it affords shelter to mice, and they will bark the cane, so destroying the crop. When the earth is taken off in the spring the canes will not rise above half way, but this serves as a shield from hot sun and winds to the fruit, the young shoots growing upright to provide shade to the fruiting canes. When the young canes have got rooted, by being let into the ground at the top, it is important to take care that they are not planted next year wrong end up.

The red sorts do without any cover in winter. Only the canes that grow in a space 20 inches wide should be allowed to grow; all the rest of the suckers should be treated as weeds and plowed up.

In black currants, *Fay's Prolific* is an excellent variety. Propagation. Cuttings of currants, 5 to 8 inches long, should be used, and may be taken from the bushes in the spring. In the old country the currant is cultivated as a tree on one stem, spreading out like an umbrella, but here there is considerable risk of loss by the currant borer, and it is better not to rub off any of the buds from the cuttings. In this way there may be over half a dozen stems coming up from one root, and should one of them be lost the rest fill up the blank. They may be stuck in a hole made with a pointed stick, deep enough to cover all but an inch or so of the top end of the cutting, and care should be taken that the earth is squeezed firmly around the bottom of the cutting as well as the top. If there is an air space left at the bottom of the cutting, it is likely to die, and for the same reason there should be regular cultivation among the plants. Two feet apart between the rows and eight inches apart in the rows is a proper space for all currant and gooseberry cuttings. For those who do not care to wait till plants of their own propagation get established, *The Nor'-West Farmer* can confidently recommend Mr. Stevenson himself as a safe man to write to for

plants and shrubs. He sells large quantities every year, and packs them well, so that purchasers may rely on getting what he sells in the best possible condition for planting. Write Mr. Stevenson for a price list, and order early, should you think of trying. In concluding his address, Mr. Stevenson spoke as follows:—

As a rule farmers are obliged to work so hard and practice such rigid economy in order to make ends meet, that they are apt to lose sight of everything but the practical and useful, and become oblivious to the many little trifles that go to make home attractive, and which add so much to the sum of human happiness, although they may not add a peck of wheat or a forkful of hay to the season's product. There is some danger that farmers will become so intent on making their farms pay a money return that they will lose sight of much that is beautiful in farm life. It is right, since farming is a business, to make it pay, but a few home attractions should not be overlooked in the struggle for the useful. And this is one reason why so many of the boys, when they grow up, want to leave home. They go to town occasionally on business, and

the hot summer time. And every farmer's wife can find leisure to plant a few flower seeds in the spring, and will find health, strength and pleasure in caring for them through the summer, if the boys will but tidy up the fences and fix them so that the pigs and chicken will not make her labor in vain. Perhaps some of you may say this is all nonsense, but let me impress upon your minds this fact. There is no danger of either your wives or your children storing up too many pleasant memories to cheer them during the dark days which will be sure to come sometime to all. If you do your part to help them, kindly and without grudging, your own sleep will be sweeter from the consciousness that you have done what you could to cheer and brighten their lives. Let us see what can be done this coming spring. It is surprising what a very little time it takes to give everything about the farm, the barn and the dooryard an air of thrift and comfort when any attention at all is paid to appearances, and it is surprising how much a very little adornment of the dooryard will add to the attractiveness of the farmer's home. Let us go to work, then and make the farm and all its be-



BLACK CAPS.

there they see nice lawns, flowers and shade trees in front of the houses. The contrast is perhaps great to what they have been accustomed to, and they go home charmed with the beauties of city life. There is no place on this wide earth where love of the beautiful and attractive in nature may be indulged in so lavishly, and at so little expense, as on the farm, for there is no place so near to nature's heart. Neither is there any place which offers better opportunity for developing broad-minded men and women, if the advantages are only appreciated. A clean, well-kept grass plot in front of the house, with a number of our forest trees here and there. In the dooryard and around the house some of our hardy perennial flowers are luxuries that cost nothing and may be had almost for the asking on every farm. Life is too short to be spent in one continual drudging struggle for mere existence, in pandering to the merely animal wants of our natures. It is largely our own fault if the boys get discouraged with farm life and desire to forsake it at the first opportunity. True, there is work enough, and hard work, too, on the farm, but the poorest among us can find time to plant a few trees about our dooryards to refresh us with their grateful shade in

longings attractive, if from no other motive than that of inspiring a love of and respect for the farmer's calling in the minds of the boys and girls, who are born and brought up on the farm.

I hope the boys will lead off on many a farm this spring by planting out some of our native trees for shade and ornament. And then I hope the women folks will second the motion with ornamental plants and flowers in their proper places. Let us all "brace up" and see how much of beauty just a little thought and labor can add to our country homes this year.

All About the Mistletoe.

Everybody is more or less familiar with the pearly berries of the mistletoe and the pleasant associations connected with it at a certain season of the year. The particulars of its growth and habit will be interesting and new to many of its admirers.

The mistletoe (*Viscum album*), of the natural order *Loranthaceae*, is a true parasitical plant. At no period of its existence does it derive any nutriment from the soil or decayed bark. It lives on the stems, branches and trunks of trees.

Tradition almost inseparably links the mistletoe with the oak, but to-day it is very rarely found in that tree. It grows most commonly on apple trees, and seldom, if ever, on the pear. Next to the apple, it seems to favor the poplar, lime, horse-chestnut, and white-thorn. Occasionally it is found on the maple, willow, sycamore and acacia. Never, spontaneously at least, does it appear on the birch, beech, holly, walnut and elder.

The roots penetrate into the wood of the tree, but mainly to absorb water, the crude sap which is being carried through the wood of the tree to its leaves. The shoots of the mistletoe, and even the roots flourishing in the wood, are rich in chlorophyll.

Wrapped in mysticism, little wonder that the plant was for a long time supposed to have been propagated, in its natural state, by a bird—the "mistle-thrush," which fed on its berries. For years, its artificial culture was regarded as an impossibility. Science has proven that its propagation is not limited to spontaneity. The bruised berries are exuding glutinous. A viscid mistletoe berry sticks to the rough bark of a tree; the large embryo germinates. Its root apex turns away from the light to the branch. The radicle bores through the cortex (bark) and works its way through the cambium (the viscid, secretive layer between bark and wood), to the wood of the branch of the tree. In time, roots from the base of the mistletoe stem, grow within the soft, living cortex. Then from these base roots, lateral roots arise on the side turned toward the wood of the tree (host-plant.) These lateral roots penetrate through the cambium layer of the wood, and are surrounded by the growing, woody layers; they become elongated at the bases, and constitute the "suckers" of the mistletoe.

Anatomically, the *Viscum* root of the mistletoe bears little semblance to the structure distinctive of the true root. The adaptive peculiarity of the sucker is striking. Its growing point is converted into permanent tissue, while its growth in length occurs in the cambian layer of the tree-branch. Finally, the *Viscum* roots, losing themselves in the cortex of the branch are rapidly multiplied. From them spring shoots which break through the cortex of the tree and come forth into the light. From these again, new shoots pierce the cortex and grow and multiply within the cambian layer of the branch. In this manner an entire tree, from crown to base, may be completely covered with a dense growth of mistletoe.

It is said that most of the English mistletoe sold in America is grown in Northern France, almost always on the black poplar. It is cut about November 20th, sent across to England in crates and then out here.

The Care of House Plants.

Owing to the dry air of a heated room plants are more liable to be infested with insects than those grown in the open air or in a conservatory heated by hot water or steam, yet the trouble given by these insects has been greatly exaggerated. All that is required is a little precaution to prevent the insects from getting the upper hand, as they increase rapidly, and are more difficult to get rid of when once they have taken possession of the whole plant. It must not be supposed that all plants alike are liable to be infested with insects, there are many which are not at all or seldom attacked. This is the case with geraniums and most begonias.

There are four kinds of insects with which both parlor and greenhouse plants are apt to be infested, namely, the green fly, the red spider, the mealy bug, and scaly bug. Of these the green fly is the

greatest pest. It is a small green insect, which settles on the leaves and stems, and multiplies very rapidly. It should, therefore, be watched, and as soon as it makes its appearance, means taken to get rid of it, before it gets too numerous, as it soon will destroy the beauty of the plant. In a greenhouse all crevices may be closed, the air can be filled with tobacco smoke. In a parlor smoke is not admissible. As long as there are but few insects on the plant, they can be readily washed off with water or soap-suds. If, however, through neglect, the plant has become pretty well infested with them, then the only way to free it is to immerse the entire foliage of the plant in a tub of soap-suds, which will prove quite effectual. This process will only have to be repeated once or twice during the winter.

The red spider is so small that it can hardly be seen with the naked eye. Its presence is detected by the leaves assuming a yellow or sickly appearance. It generally makes its home on the under side of the leaves, and seems to feed on the fleshy part of the foliage. It displays rather a fanciful taste, for whilst it shows a particular liking for some plants, others are rarely infested by it, whilst others are altogether beneath its notice. As the presence of this tiny creature generally becomes apparent only when the mischief is done, it is advisable to adopt means to prevent it from making its appearance at all, which may be readily done with a little care. Indeed, prevention is here far easier than the cure, for when this insect once gets possession of the plant, it is not so easily got rid of as the green fly. Now whilst the red spider luxuriates in the dry air, moisture on the contrary is fatal to its existence.

In a greenhouse frequent syringing will kill the spiders. On house plants it can be most easily killed by dipping the plant in water, in which sulphur or whale oil soap has been dissolved. This, if done every fortnight, will keep down the spider.

The mealy bug is a reddish insect, covered with a glutinous woolly substance, so that at first sight it has the appearance of a small speck of cotton, but on removing the covering the insect is found imbedded in the white substance. It is a very ugly looking creature, and much more difficult to get rid of than either the green fly or red spider, as the covering apparently forms some protection to the insect. It is generally found in the axils of the leaves and on the stems of the plants. It is not so particular in its choice of food as the other two insects, though it apparently evinces a greater fondness for some plants than others. The easiest and most effectual way to get rid of this ugly creature is, as soon as it makes its appearance on a plant, to wash it off with a soft sponge or some other soft material. This is the only mode that I ever adopted, and I have never experienced much trouble in exterminating it, although I have a large variety of plants which are very apt to be infested by it. It is important not to allow it to multiply, for it spreads very rapidly from one plant to another.

The scaly bug gives very little trouble. It is a little scaly insect found beneath the leaves of some plants. Its presence is indicated by the leaves showing white spots on the upper side. Sometimes they are found attached to the stems of plants. They are, however easily got rid of by merely washing them off with water.—J. M. Hirschfelder in Montreal Star.

We are in receipt of a copy of Perkins' Seed Catalogue for 1897. You may have a copy by asking for it.

Advertise in The Nor'-West Farmer.

Purest and Best.

Windsor Salt

Is the only salt manufactured by the Vacuum Process in Canada, and is much superior to any imported Vacuum Process Salt.

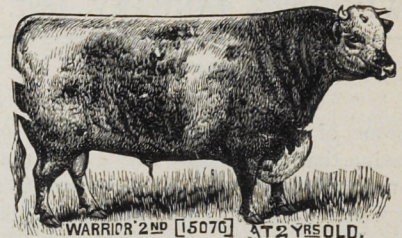
TABLE SALT, DAIRY SALT, CHEESE SALT,

Made by a Patent Process solely in use at the Windsor Salt Company's Plant. Each package containing these grades is marked with our Trade Mark.

Best quality Ordinary Fine Salt for general purposes.

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RESTRONGUET STOCK FARM.



WARRIOR 2ND [5070] AT 2 YRS OLD.

FOR SALE—Forty head of pure-bred young Short-horn Cattle, about half of each sex, from eight to eighteen months old. All sired by Indian Warrior, who took sweepstakes at the World's Fair, Chicago, also first at Winnipeg Industrial, 1896, for himself and two of his get. All stock sold will be delivered in January at our risk, and freight free as far east as Winnipeg and west as far as Regina. Time given for stock if required.

JOSEPH LAWRENCE & SONS,
Clearwater, Man.

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and pay for it before giving it a trial.

The firm who is afraid to let you try their incubator before buying it, has no faith in their machine. We will sell on trial, not a cent until tried, and a child can run it with five minutes attention a day.

We won First Prize World's Fair and will win you for a steady customer if you will only buy ours on trial. Our large catalogue will cost you five cents and give you \$100 worth of practical information on poultry and incubators and the money there is in the business. Plans for Brooders, Houses, etc., 25c.

N.B.—Send us the names of three persons interested in poultry and 25c. and we will send you "The Bicycle: Its Care and Repair," a book of 180 subjects and 80 illustrations, worth \$5 to any bicycle rider.

Von Culin Incubator Co.,
1832f Box 130 Delaware City, Del.

NO DUTY TO PAY NOW



On the FOLDING SAWING MACHINE. It is made in Essex Centre, Ontario. It saws down trees, saws any kind of timber on any ground. 9 CORDS BY ONE MAN IN 10 HOURS. Send for free illustration showing latest IMPROVEMENTS, and testimonials from thousands. First order secures agency. Address Main Office, FOLDING SAWING MACHINE CO., 64-66 S. Clinton Street, Chicago, Ill.

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FOR SALE

Grown by W. Wenman, of Souris, with especial care. Sample and price on application. [1851]

THE NOR'-WEST FARMER

ESTABLISHED 1882.

The only Agricultural Paper printed in Canada between Lake Superior and the Pacific Coast.

THE STOVEL COMPANY,
PROPRIETORS.

CORNER McDERMOT AVE. AND ARTHUR ST.
WINNIPEG, MANITOBA.

SUBSCRIPTION TO Canada or the U.S., \$1 a year, in advance. To Great Britain \$1.25 (5s. sterling). Agents wanted to canvass in every locality, to whom liberal commissions will be given.

ADVERTISING RATES.

Transient advertisements, for less than three months, 15c. a line (each insertion). Terms for longer periods on application.

All advertisements estimated on the Nonpareil line—12 lines to an inch. A column contains 128 lines.

Copy for changes in advertisements should be sent in not later than the 1st of the month to ensure classified location in the same month's issue. Copy for new advertisements should reach the office by the 4th of each month.

LETTERS.

Either on business or editorial matters, should be addressed simply "THE NOR'-WEST FARMER, Winnipeg," and not to any individual by name.

WINNIPEG, JANUARY, 1897.

OUR PREMIUM.

Some of our readers have got the impression that we are only giving premiums to new subscribers. This is incorrect, as every one who sends us direct the regular subscription price (one dollar) for 1897, and payment of any arrears, is entitled to the premium. If our clubbing rates are taken advantage of, we do not include Gleason's Horse Book.

A GOOD NEW YEAR.

The year on which we have entered is full of hopeful augury for the farmers of Manitoba. Prices for wheat are very unlikely to fall so low for years to come as they did in 1895, and there is an almost certainty that the world's demand for bread will keep strong enough to ensure paying prices for all the wheat we can raise. We have learned in years of depression how to raise crops at a minimum of cost, and that knowledge will not be lost in what we trust shall prove the more prosperous remnant of the century still to run.

The widespread interest in the gold discoveries east and west of us will certainly bring a large amount of outside money to be spent in developing the mines already in sight, and the stimulus given to prospectors by the success that has already crowned their researches may lead to still greater discoveries, all of which means the outlay of money for food and other furnishings required. It is one of the worst drawbacks to our agricultural prosperity that our values are fixed by competition in the world's markets 5,000 miles away. But the extensive mining enterprises on our own borders furnish a market for our staple products that is sure to quicken prices and give wholesome stimulus to every form of agricultural production. The long winters also have been

a drawback to successful settlement, but mining is largely independent of weather or seasons, and the prospect of constant work at fair wages is sure to induce the right kind of immigration. Already in Winnipeg it is found that the Swedes, instead of hanging round in enforced idleness through the winter months, are mostly employed in the mines, and this is sure to encourage further immigration from one of the most industrious and capable nations of Europe.

That everyone of our readers may enjoy a full measure of prosperity, and do their full share in laying the foundations of a vigorous, law-abiding and prosperous community is our sincere wish. It shall be our constant aim to maintain the quality of The Nor'-West Farmer, both in its farming and household departments, as to ensure a continuance of the approval of our rapidly increasing list of advertisers and readers.

A FARMERS' TARIFF.

The Dominion government, which got into power with taxation for revenue as a main plank in its platform, has at present some of its most experienced members busy in the east collecting information on which to build a scheme of taxation in harmony with its avowed free trade principles. They may find their way to this end of the Dominion before they close down their investigations, but it is quite possible that before they have got over the ground in the more settled east they may break down under the load of conflicting and distracting testimony which they are accumulating. A very large amount of the annual expenditure to be met by every Canadian government is uncontrollable and must be provided for no matter what may be the economic views of the finance minister and his associates. It is much more diverting to the spectators in the gallery than it can be to the commissioners themselves to speculate on the report which those gentlemen will compile from the evidence daily being presented to them, knowing, as they well do, that the probable revenue of the country will have a hard struggle to balance the charges it has to meet.

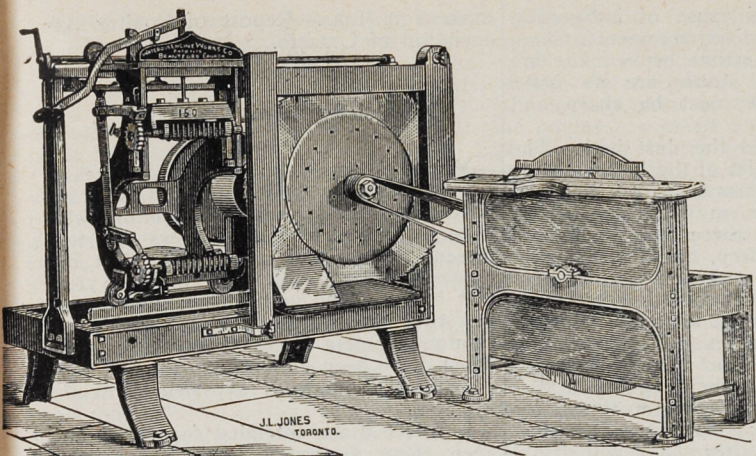
If we in the west had not a very deep interest ourselves in the whole business, it would be as good as a comedy to read the exposures made by manufacturers' witnesses of the shoddy American goods, such as clothing, with which our eastern manufacturing friends have to compete. and from which they show such zeal in protecting the innocent farmer who might be duped into purchasing clothing made of rags that may have been worn in an old world potato field by a scarecrow.

Raw material duty free and the smallest possible modification in the duties now charged on all outside manufactures, is the keynote of all the demands made and the suggestions offered by the manufacturing interests of the east. The farmers pitch their demands to the same keynote.

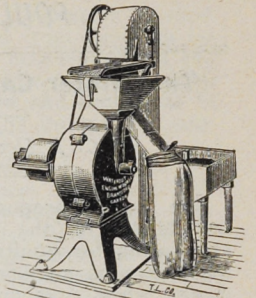
Duty free American corn to produce cheap beef from Ontario fed bullocks, and duty free implements and coal oil are the demands of a good many eastern farmers, and so far as we in the west have spoken out, farmers here are of much the same way of thinking. If we could all have our way, a very nice tariff might be adjusted, but it would be very much on the financial basis of the old country landlord, who would not stand further reduction of rent and took a farm or two into his own hand. The balance sheet made out by his manager put the laird in great glee; it came out beautifully, and was shown triumphantly to the discontented ex-tenant, who soon put another face on the matter by asking who had paid the rent. If we could find a gold mine, out of which to pay the taxes, open ports and free trade would be very nice, indeed.

The farmer, especially the Manitoba farmer, sells most of his produce in a free trade market, from which he is separated by an expensive land and ocean carriage, and it is only natural that he should desire, with the very modest balance left to himself, after all other charges have been met, to buy what he needs in as nearly as possible a free trade market. It is gratifying to know that at present reliable information is being collected by our local government, our leading business men, and last, but not least, by our Central Farmers' Institute, as to the oppressive incidence of a high protective tariff on the entirely unprotected industry, on which the great mass of our community depends for its livelihood. If the protection will not go half way round, and the blanket is not big enough to cover the bed, it is quite natural that we in the west should like a bigger share of it, even at the risk of our bedfellows, the protected manufacturers having to stay out a little more in the cold than they have yet had to do. Too much coddling is bad for anybody except an invalid. Our "infant industries" have had their full share of dry nursing, and whatever may be the outcome, it is the most natural thing in the world, when tariff revision is up for discussion that the farmers of Canada should keep a bright lookout and make a decided demand for a fair share of any advantage the present inquiry may serve to bring to light. There is nothing to be gained from undue modesty, and the Irish statesman's precept, "Mind your own ravenue," should never be lost sight of by our western representatives when the final tussle comes.

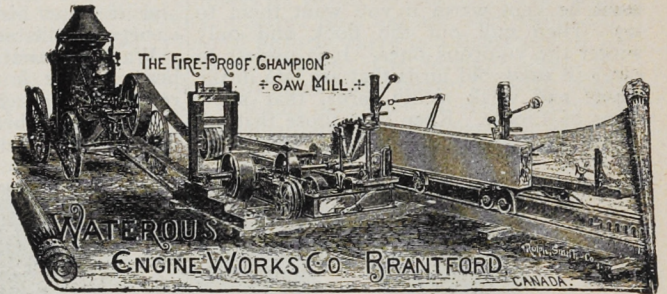
—Subscribers entitled to the premium, Gleason's Horse Book, received at this office since Dec. 14th, 1896, have not been sent same, on account of our supply having run out. However, another edition will be ready immediately, when we will be able to supply all those received up to Dec. 31. Those received since that date will be forwarded in a couple of weeks. The demand has been much larger than we anticipated. We have, however, made arrangements whereby we can supply any number after the latter date.



The Waterous Shingle Machines, Lath Mills, and Wood Saw Rigs.



20 inch Standard French Buhr Choppers.



Light Portable Saw Mills, Suitable for Threshing Engine Power.

WATEROUS ENGINE WORKS CO. LD.
WINNIPEG, MAN.

—One of our exchanges has in a single issue used five of our articles, set up in his best type, but appears to have forgot to credit them. It's all right, friend; it shows you know a good thing when you see it.

—In the address made by Dr. Torrance before the Farmers' Institutes, given elsewhere in this issue, we note the plain, practical manner in which everything is stated. This is as it should be, instead of trying to load the lay mind with a lot of technical terms.

—We wish to particularly draw the attention of those interested in dairying to the series of articles started in this issue of The Nor'-West Farmer from the pen of C. C. Macdonald, Dairy Commissioner of Manitoba. It will pay every owner of a cow to read and thoroughly digest these, and, in order that those who are not at present on our list, and may wish to subscribe, can have the complete series, we have printed extra copies and can supply the January number.

The Farm Pupil.

The fresh caught "pup" has now become so much a thing of the past that it becomes our sad duty to catch his fleeting image before it entirely disappears from our horizon, and embalm it with other types of old times in the Great Northwest that are now fleeing before us.

He arrived generally in a very correct suit of dittoes and a white shirt and collar; guns had he of the latest design and fishing tackle enough to set up a Newfoundland coast settlement. A fox terrier was also a usual attendant, and he had a general idea that farming meant riding, shooting and fishing the year round. He was generally a failure for the army or other branch of the public service, and his friends at home always spoke of him as "Poor Fred, gone out to the colonies; such lots of opportunities; glorious life, riding, shooting, fishing, etc."

His first experience of farm life was

generally a damper; he found that he was expected to be ready for breakfast between 6 and 6:30 a. m. After this meal he discovered to his dismay that he, the descendant of the great Fitzsmith family, was to have charge of a pair of large and uncouth horses, which he was told to follow with the happy medium of a walking plow as a point of conjunction. He went forth the first day clad in immaculate riding breeches with box cloth gaiters and brown boots, to return at night, weary, dirty, footsore and disgusted with life. His next effort was in the dairying line, but, after spoiling three of his best pairs of trousers, came to the conclusion that he had no use for the cow, or, as I heard one youth state, "He wouldn't keep any cows on his farm." About this period the turning point in his career generally occurred, and he either degenerated into a bar loafer and town hanger-on, with enlistment in the police as a finale, or he suddenly developed in to a professional "batcher" of the most pronounced type, who gloried in his rags and untidy ways, to quote the immortal words of Bon Gaultier's Ballads: "Grew a beard of fiercest carrot; never washed his face." When this latter fate came on him, he lived a life which a Patagonian savage would not envy, and took cruel joy in sending home photographs of himself in weird and ghastly attire to his doting lady mother in England, not always, we fear, without ulterior objects in view. He has passed from us in the early stage. A few unkempt beings living the life of a hermit on the prairie and a good number of very smart police constables now represent the ultimate results of all that was written in the English and colonial newspapers some twelve or fourteen years ago on "What to do with Our Boys."—Grenfell Sun.

A promising variety of wheat has for the last few years been cultivated by John Duncan on the Souris district. It is a large, well-developed, bright variety, which he calls Dakota Wonder, and his last year's crop of it amounted to 16 bushels.

W. T. Fisher, Gainsboro, in sending his subscription for 1897, writes:—"We offer The Nor'-West Farmer as premiums in our next year's agricultural show, for it is a paper worth it, and it should be read by every farmer in Manitoba and the Northwest, for it is full of valuable information to the farmers."

Slow but Sure.

The Pilot Mound Sentinel says:—Notwithstanding low prices for produce and occasional adverse seasons, the farmers of Manitoba are prospering; nor could it be otherwise when industrious and intelligent men are located on such excellent land as this country is composed of. Besides providing for ordinary requirements, such as food and clothing, the prudent farmer makes improvement and advancement every season that he does not always consider in his calculations nor count among his profits. New buildings are erected and others are improved, fences are built, and increased areas are brought into cultivation. A new implement is now and then provided; young horses grow into maturity and become valuable; cattle increase in numbers and are a satisfactory source of profit; pigs, sheep and fowls, grunt, bleat, or cackle about the premises, and before the farmer fully comprehends the situation he finds himself surrounded by abundance. Animal life seems to be the most profitable of all things that the agriculturist has it in his power to produce, and this fact the farmers of Manitoba are fast finding out, for no country affords such excellent opportunities for feeding stock of every description. Agriculturists are now in a much better position than they have been. They understand the country much better than they did in the early years and make fewer mistakes, for experience has taught wisdom. They have splendid, vigorous, healthy and powerful teams, instead of the slow oxen or the dying horses that the first farmers of Manitoba had to use. Many have now commodious buildings and fences, with a proper and plentiful supply of water for their herds. Almost every man in the province is within easy reach of a railway, a mill and a market. Taking one year with another, the country has shown that the land is amazingly productive. Prices for produce are improving, and the fact that in long settled countries towns and cities are growing out of all proportion to the districts that surround them, shows that meat, grain and other products in large quantities must be procured from other countries, and Manitoba, when compared with other lands, stands first as a producing province. As grass and grain grow unnoticed in the showers and sunshine, so the farmer's prosperity increases even when he is unconscious of the advancement.

POULTRY.

The Winter Care of Poultry.

By C. J. Devlin, Ottawa.

The paper I propose to read this evening deals with the question of feeding and caring for poultry so as to produce the maximum number of eggs during the winter when eggs are worth 30 and 40 cents a dozen. First you must provide good warm houses for the poultry—they must be kept warm if you want them to lay. Then cull out the flock and only winter the vigorous ones. It is useless to carry in stock old birds that are late in the moult and weak sickly birds, that show signs of disease. Keep only those that are in the best condition, as these will be a

kind is the fruitful cause of indigestion and other internal disarrangements. Glass, earthenware or limestone broken fine are good, but smooth stones are no good whatever; the grit must be sharp and hard.

Next we come to the dust bath. The dust bath is the toilet of the hen, and one she enjoys, as it frees her from lice and helps to keep her in vigorous health. Make a box about three feet square and about ten inches deep, and fill it within one inch of the top with fine sand or road dust. Coal ashes are good if sifted; but do not use wood ashes, for if the hens get wet it will cause sores on their bodies, and if your birds are a yellow legged variety it will bleach their legs white.

Water is another important thing, for hens require lots of water—in fact, few realize how much water a hen will drink. In cold weather the water should be warmed, so that the birds may not be

make a mistake.—Report of Poultry Association of Ontario.

Fitting Show Birds.

Year by year poultry shows increase, says the Fanciers' Gazette, and it is no uncommon thing to find exhibitors who have competed in such shows for ten, fifteen, twenty, and more years. It becomes apparent, with each recurring year, that fowls picked up from common every day runs and yards without preparation, cannot compete successfully with those which have been conditioned for that purpose in the hands of experienced exhibitors.

1. Select those intended for show and keep them separated from the general flock; keep the males, each by himself, and do not crowd the females so that they



WHITE PLYMOUTH ROCKS.

source of profit and not a burden. Remember that one egg in winter is worth four eggs in the summer, and practical people should aim to have their hens lay when eggs are worth the most. Feed a warm mash in the morning of bran, boiled potatoes and turnips and pepper and salt. Be sure not to give a full feed of this, for the hens will otherwise be idle until their next meal. Cover the floor of the hen house with six or eight inches of straw, leaves or chaff, and scatter in it a few handfuls of wheat, barley or oats, and make the birds work for the rest of their meal. Hens closed up in the winter must have exercise, or they will get fat and will not lay; they must have work, for their nature requires it. Twice a week give them meat in their mash, for they need it to help make the eggs. At night give them an ample feed of grain early enough to enable them to go to roost with full crops. Grit is another important thing for your hens; failure to provide grit of some

chilled and to prevent the drinking vessels from being frozen.

A box of broken mortar is also a good thing to have, as the birds will eat quite a quantity when shut up during the winter.

Be sure and keep your hen house clean and sweet. Look out for lice. Keep your roosts well oiled with coal oil and your house well whitewashed with lime. You will not get eggs if you breed lice, and they are only too easily bred. I say look out for lice.

Keep green food before your hens at all times—cabbages, turnips, beets or some other kind of vegetables. Your hens must have green food to keep them in good condition for laying.

Do not crowd your hens. Do not keep a hundred where there is room for only fifty. Five square feet is little enough for one hen; ten square feet is better. My remarks may seem rambling, but if you will follow them I am sure you will not

will trample on each other or soil their plumage.

2. They must be not only in perfect health, but in fair bloom, which will be effected by housing, feeding, exercise and the proper age.

3. The water and food should be regularly given, and the latter varied as much as possible; their exercise should be on deep, long, clean straw or leaves (straw preferred.)

4. If white earlobes are desirable, protect the fowl from violent wind and bright sunshine. Rub them gently with the soft part of the forefinger frequently to make them soft and kid like.

5. The combs, faces and wattles should be occasionally washed with cold water, to which add a little pinch of salt, to bring out the color, wipe dry and finish by rubbing a little butter on them and then wipe it off. The comb can be trained a little by frequent and gentle pressure to the direction desired.

6. The shanks and toes should be washed now and then with soap and water, using a small brush to reach all the cracks, and after drying, rub on and then off a little mixture made of three parts of sweet oil and one part of sulphur, to make them smooth and bright in color.

7. Rub the plumage of the fowl downward occasionally, for ten minutes at a time, with a very soft cloth or piece of silk, to give the feathers the beautiful sheen, which is so much admired. This should be well done just before placing the fowl in the show pen.

8. To educate them to be gentle, they should be placed in small apartments or coops for a while, where members of the family frequently pass, and they will soon learn that there is nothing to fear, and it is better to gently place the hand upon them so confined quite often to better dispel their fear, and bits of choice morsels and meat might be given from the hand held at the top of the coop, causing them to stretch up and look for it when one is near—they make a more favorable appearance when visitors or the judges are inspecting them by the practice.

Manitoba's Annual Poultry Show.

The Manitoba Poultry Association have been fortunate in securing suitable premises immediately adjoining the store of the Scott Furniture Co., on Main street, for their exhibition next month. The location is exactly opposite the building in which it was held last year. The Nor'-West Farmer would like to see every poultry breeder in the west represented. Last year the exhibit was good, and we believe had a very beneficial effect on the industry. The competition in many classes was keen, and the prize-winners were all birds. However, we bespeak a much finer display of birds next month. Mr. Kittson's pen, which won the Lieut.-Governor's cup last year, was a good one, but we think he will have some good competitors. During the year some "new blood" has entered the field, and to these we would say by all means send in your entries. It may be that some will hold back from entering, fearing that the old breeders and prize-winners have superior birds. To such we would say, exhibit; it will do you a great amount of good to rub up against these gentlemen in the show, and the experience gained will be of much value. The secretary, Mr. E. Marston, will be pleased to forward entry blanks to all desiring them.

Poultry Items.

Never waste time over a sick hen. It will not pay. Behead it at once, lest others become infected. An "ounce of prevention is worth a pound of cure" every time, in the chicken business.

Success or failure in the poultry business depends upon the attention given to the details of the work. The man who works with system and gives careful attention to every part of the business is the one who finds the readiest market at the top prices. This means success. In carelessness and inattention to details is indelibly written the word failure.

A patient woman, who has 200 young chickens on hand, besides half a dozen yards of grown fowls, and who has been fighting lice, and mites, and gapes, and attending to her household duties and four children, writes me: "Job never run a poultry yard." I hasten to reply that he never did. A few boils and the loss of some stock is nothing in comparison to the trials of the woman with chickens, babies and household work to attend to.—Southern Fancier.

All pullets or hens that show bright red combs will soon begin to lay, and the red combs also indicate that they are in good health. Be careful not to overfeed, for a fat hen may show a red comb also. If the combs are small and shrivelled it is probable that the hens will not lay for two or three months, or even before spring, and should not be retained. If the combs are black the birds are not well, and it would be proper to then look for lice.

When a bird becomes frosted on the comb (frozen comb), the best remedy is to keep in in some place where the wind cannot reach it. Fanciers protect such tall-comb breeds as Leghorns by placing choice specimens in a barrel at night, having a block of wood in the barrel for a roost. The first thing to do is to swab the injured comb with glycerine. The next day the comb should be anointed with an ointment composed of equal parts of ichthyol and lanoline, which should be

repeated every day. Healing is a slow process and only relief from pain can be afforded, as the comb may slough off entirely. It is an advantage to keep a fowl which has been frosted and healed, as it will be less liable to be injured the succeeding winter.

Latest German advices state that Dr. Meiman, a well-known bacteriologist, has discovered a remedy for tuberculosis. It is prepared by mixing serum of goat's milk with bacilli from the diseased animal.

The Sydney Morning Herald estimates the total wheat crop of the six Australian colonies at 18,643,000 bushels. The quantity required for food and seed being 25,706,000 bushels, there is a deficiency of 7,063,000 bushels. The foreign wheat ordered or afloats amounts to 2,324,000 bushels. Of this deficiency no small share will be supplied by the Canadian Northwest. The Ogilvie and Lake of the Woods mills are filling large orders.

\$1,500 IN PRIZES.

THE ANNUAL EXHIBITION OF THE

MANITOBA POULTRY ASSOCIATION

WILL BE HELD AT

WINNIPEG FROM FEBRUARY 15th to 20th, 1897.

All Entries must be in by February 15th.

E. MARSTON, Secretary.

Exhibitors are requested to obtain certificates from station agents, when purchasing tickets, in order that they may avail themselves of the reduced rates.

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IN THE DOMINION

It will give statistics compiled from the latest and most authentic sources as to Trade and Commerce, Agriculture, Minerals, Mercantile and Marine News; also the composition of the Parliament and the Senate.

IN THE PROVINCES

A History of each Province is given, having reference to Government, Education, Game Laws, etc.

IN THE FIELD OF SPORT

The latest Chronicles and Records are given in Horse Racing, Bicycling, Jumping, Cricket, Golf, Hockey, Football, etc.

LODGE MEN

Can have all the Data they want, whether they are Masons, Oddfellows, Foresters, or members of other friendly societies.

TRE CHURCHES

Of all denominations are dealt with and full lists of clergymen and their location given.

The above forms only a small part of the general information afforded by this handy Annual, and those desiring it will find needed facts upon Post Office, Customs and Excise, Legal Information, Institutions, the Courts, Savings and Loan Companies, etc. The ANNUAL will give also a complete compendium of information on Great Britain and the United States. It will also contain the simplest and readiest method of computing interest at 5, 6, 7 and 8 per cent.

You May Obtain The Annual Free!

By subscribing for the Weekly or Semi-Weekly Free Press to Jan. 1, '98, and enclosing direct to the Free Press office **WITHOUT DELAY** the full subscription price of \$1 for the Weekly or \$2 for the Semi-Weekly. This offer does not apply to remittances from which Agents' commissions have to be deducted. The number of copies to be disposed of **IS LIMITED** and we cannot guarantee them to be sent after the number now in press is exhausted.

Enclose the subscription, with the money in registered letter, or by a P.O. order, addressed to

THE MANITOBA FREE PRESS COMPANY, WINNIPEG, MAN.

CLUBBING.—The NOR'-WEST FARMER and the WEEKLY FREE PRESS will be sent to any address in Canada or the U. S. for one year for \$1.50.

The Pert Chicken.

There was once a pretty chicken,
But his friends were very few,
For he thought that there was nothing
In the world but what he knew.
So he always in the farmyard
Had a very forward way,
Telling all the hens and turkeys
What they ought to do or say.
"Mrs. Goose," he said, "I wonder
That your goslings you should let
Go out paddling in the water,
It will kill them to get wet."

"I wish, my old Aunt Dorking,"
He began to her one day,
"That you wouldn't sit all summer
In your nest upon the hay.
Won't you come into the meadow,
Where the grass with seeds is filled?"
"If I should," said Mrs. Dorking,
"Then my eggs would all get chilled."
"No, they won't," replied the chicken,
And no matter if they do,
Eggs are really good for nothing,
What's an egg to me or you?"

"What's an egg?" said Mrs. Dorking;
"Can it be you do not know,
You yourself were in an eggshell
But a little month ago,
And if kind wings had not warmed you,
You would not be out to-day,
Telling hens and geese and turkeys
What they ought to do and say,
To be very wise and shrewd
Is a pleasant thing, no doubt,
But when young folks talk to old ones
They should know what they're about."

How Chickens Leave the Egg.

Observations made through the glass front of an incubator while the eggs are hatching have done more than anything else for the study of early chicken life. The process, too, is interesting—wonderfully so. An egg will be lying white and smooth, when suddenly a movement is noticed, with a grating, tapping noise, and a little hole will appear, and a diminutive bill will be seen trying to enlarge it. Then some of the downy little chickens that have been sitting around gossiping with each other will become intensely interested and run over and take a hand in the affair.

The amount of sage interest they take in the poor imprisoned chick in that egg is incredible. They look so wise, and seem to hold converse with each other. But every time he moves, they will scare him so that he withdraws into his shell, possibly resolved to become an egg again, and see life in the form of an omelette. Then the curious little chickens will pretend to go away, but as soon as the unhatched one moves they are after him again. When they are tired they go away, and leave the little creature to come forth in peace.

The hole in the shell grows larger and longer around the shell; finally the top of the shell is raised, and a head and neck, covered with what looks like coarse, scant hair, is thrust out. Then a kicking and a scrambling takes place on the part of the chicken to free himself from the shell. Every now and then he will lie quiet for a while, exhausted by his efforts; but at last he steps out, a mere wet ball, and in a few hours is a fluffy, downy little "chick."

The man who would be successful in any business must study its requirements and undertake it with energy and intelligence. The farmer is no exception.

Separate the Sexes.

If it can be done, now is a good time to separate the cockerels from the pullets. Both will be gainers from such separation. They will grow faster and mature into finer birds if they are separated. The pullets will be spared the vexatious attentions of these lusty young males, and the males will become quieter and more peaceable. A still further division is advisable when it can be made, and that is that the cockerels intended for breeders and exhibition should be removed from those intended to be killed. The latter can be more closely yarded than the former, and should be fed on highly fattening food. It is, perhaps, almost too early to crowd the fattening, but they can be got into condition for killing, so that a little crowding will finish them off in nice shape. The breeding and exhibition cockerels should have a good range, plenty of bone and muscle forming food, and should be kept growing, in order that they may develop their possibilities. A like division can be made of the pullets if any are intended to be slaughtered; or, indeed, one can separate the layers from the breeding and exhibition birds, in order to give the latter a better chance. The food for layers and those intended for breeders and exhibition, however, would not be materially different at this time of year.—Reliable Poultry Journal.

A correspondent of the Dakota Farmer asks: "Is there any sure way of distinguishing perfectly fresh eggs from tainted ones, or those that have been set upon by the hens for several days? Candling is quite a sure method, but if there is any other I would be glad to know it." The following reply is given: "To the experienced eye the roughish or granulated surface of the perfectly fresh egg distinguishes it at once from the more shiny or polished surface of the one that has been under the hen a day or two. We can pick out every fresh egg among a nestful of those that have been sat on two days, even in the dark. The secret is very simple. Just scratch over the surface with the finger nail; if it grates, the egg is fresh, but if the nail slides smoothly, the egg is old. A little practice makes this a sure test."

It is claimed that the two-rowed barley grown last year at Franklin by Ed. Farquhar, is one of the finest samples ever seen in Manitoba, and has been sent to the Old Country for exhibition.

General Francis A. Walker, the president of the Massachusetts Institute of Technology, has said: "No other place is so favorable for the education of the young as the moderate-sized farm. Here the child has a greater variety of object-teaching than can possibly occur in any other common form of home life. There is so much to see that instructs; crops grow, animals must be reared, so many natural laws and natural phenomena are related to the work and the business; the seasons have more significance than of mere heat and cold, and the weather means more than merely pleasant skies or gloomy days. In no other vocation can the child be so trained to habits of industry without detriment to his health or intelligence; no other is so well adapted to the sound education of intelligent and independent citizenship of the actually working portion of the population. The very large proportion of the men in this country who have become eminent in the various walks of life, who have originated on farms and received their early training there, is the natural result of the influences of this vocation on education and intellectual development."

The Veterinary Association of Manitoba

Under the authority of Secs. 18, 19, 20, 22 and 26 of the Veterinary Association Act, 1890 (53 Vic., Chap. 60) the following persons ONLY are entitled to practice as Veterinary Surgeons in the Province of Manitoba, or to collect fees for service rendered as such:

Alton, A. L.	McGregor.
Baker, G. P.	Binscarth.
Braund, F. J.	McGregor.
Coote, H. L.	Minnedosa.
Cox, S. A.	Brandon.
Dann, J.	Deloraine.
Dunbar, W. A.	Winnipeg.
Fisher, J. F.	Brandon.
Fowler, James.	Souris.
Hatten, J.	Alexander.
Hinman, W. J.	Winnipeg.
Hopkins, A. G.	Neepawa.
Irwin, J. J.	Stonewall.
Little, C.	Winnipeg.
Little, M.	Pilot Mound.
Little, William.	Boissevain.
Macdonald, John D.	Morris.
McFadden, D. H.	Emerson.
McGillivray, J.	Manitou.
McLoughray, R. A.	Moosomin.
McNaught, D.	Rapid City.
Monteith, R. E.	Killarney.
Morrison, W. Mc.	Glenboro.
Murray, G. P.	Winnipeg.
Robinson, Peter E.	Emerson.
Rombough, M. B.	Morden.
Rutherford, J. G.	Portage la Prairie.
Smith, H. D.	Winnipeg.
Spiers, John.	Virden.
Shoults, W. A.	Gladstone.
Smith, W. H.	Carman.
Swenerton, W.	Wawanesa.
Thompson, S. J.	Carberry.
Torrance, F.	Brandon.
Turley, C. E.	Hamiota.
Taylor, W. R.	Portage la Prairie.
Ward, S. H.	Selkirk.
Walker, John St. Clair.	Sheppardville.
Whimster, Murdo.	Portage la Prairie.
Williamson, Arthur E.	Morris.
Young, M.	Manitou.

The practice of the veterinary profession in Manitoba by any other person is in direct contravention of the statute and renders him liable for prosecution.

1612F

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Farmers on the Tariff.

At a recent meeting of the Brandon Farmers' Institute the report of the committee on the subject of "Tariff as it Affected the Farmer," was the principal subject under discussion, when the following was recommended for consideration by the commission proposed to be appointed by the Dominion government to consider the tariff from the farmer's standpoint:

1. It is our opinion that a protective tariff is detrimental to the best interests of our Dominion as a whole, and that free trade should be the objective point in our fiscal policy.

2. Until "Free Trade" becomes practicable, a system of "tariff for revenue only" should be adopted, levying mainly upon luxuries, but at the same time levied to some extent upon articles of general consumption.

3. That all articles of raw material which go to make up a manufactured product, or are used for the purpose of manufacturing a finished product, should be duty free. That all agricultural implements, binder twine and fence wire should be considered as farmers' raw material.

4. That the levying of duty upon agricultural implements of all classes, binder twine and fence wire, is a special tax upon agriculturists, and additional to the tax they pay in common with other classes.

5. That, whereas agriculture is the chief industry in our Dominion, and almost the sole industry in Manitoba, the prosperity of our people and our young nation depends upon the success of the farming class, therefore every obstacle to remunerative agriculture should be removed, and unfair and unequal taxation upon this industry should be abandoned.

6. That high protective tariff has materially restricted commerce from Great Britain, which in turn has materially restricted the investment of English capital, has retarded immigration to our western prairies and the development of our country, and we submit that the loss from these sources alone far over-balance the advantages of having a few manufacturing towns increased in population, not to speak of what this has caused the community as a whole.

7. That we recommend the system of reciprocity in farm products with the United States.

8. That we recommend the adoption of a system of income tax with a reasonable exemption.

Self-reliant Settlers.

A great deal is said about the necessity of finding means to induce immigrants to settle on the land. There are those who would make a pet of the new settler, would coddle him, and take, at the public expense, every difficulty out of his way. The consequence of this kind of treatment will be to make the new settler depending and exacting. He will get to think that he has a right to be helped and to be saved from hardships of every kind. This is not how the early settlers in Canada were treated, and this is not what they expected. They were self-reliant men, who faced the difficulties and hardships of life in the wilderness manfully. They seldom looked to anyone for help, and if they did they would not get it, for almost everyone was as poor as they were themselves. We do not wish to leave the impression that the early Canadian settlers were selfish and unneighborly. They were the very opposite. They were, as a rule, wonderfully kind to each other. When any of them had work to do which was too heavy for one man to do alone, his neighbor needed no second bidding to go to his assistance. They gathered on the settler's clearing on the day appointed and made a "frolic" of

the work. In some parts of Canada these neighborly gatherings were called "bees," but in the Maritime Provinces they were called "frolics," and they generally wound up with a dance and supper. But the settlers in those days seldom or never looked to the government for assistance. In fact they did much of the work which is now considered the province of the government to do. They cut and cleared the roads and kept them in repair with very little interference or direction from the government, and frequently no help at all. The men we speak of settled on forest land which could only be cleared and made fit for cultivation by hard work and continuous toil. Food was sometimes not too plentiful and never dainty. Yet these pioneers prospered. They cleared their farms and raised families of strapping sons and buxom daughters. They were a handy and a virtuous race. It was they who made the country what it is to-day and, although they worked hard and lived hard, we are not sure that they did not get more enjoyment out of life than their softer and more luxurious grandchildren and great grandchildren.

What we wish to direct attention to now is that these pioneers depended almost entirely on themselves. They did not look to outsiders for help. The work that was to be done they did themselves cheerfully and manfully, and the hardships of their lot were endured with patience that appears at this distance of time to be heroic. Yet they did not regard themselves as heroes. They took the rough with the smooth as a matter of course.

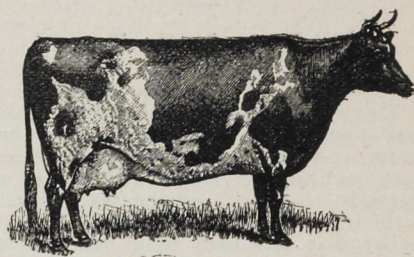
As necessity is the mother of invention, they found ways to enliven a life that might be supposed to be intolerably dreary and to perform tasks that seemed at first sight to be beyond the power of men and women possessing so few resources with means so apparently inadequate to the work to be performed. That work, we are satisfied, would never have been done if the settlers were not compelled by necessity to do it; if they were not forced to be self-reliant and to make the best use of the means within their reach. If they had been coddled by a paternal government the hardy virtues that enabled them to surmount the difficulties of their position would never have been developed and called into exercise. Men and women of the same race, we are told, have been settled on land where they had few or no difficulties to face, nothing that deserves the name of hardship to endure, yet the settlements have proved to be miserable failures. The men became shiftless and dependent. They were perpetually looking for help and complaining if it were not extended to them as soon as it was applied for, and the applications for aid were unending. This seems to be the condition at which all coddled colonies arrive sooner or later. Governments should, therefore, be careful how they extend help to new settlers. What appears to be kindness may prove to be cruelty. The settler should be taught to depend upon himself, and if there is anything in him, if he sees fit to be a resident of a new country, he will depend upon himself. If he cannot learn to be self-reliant and self-supporting the country is better without him.

Note.—This is reproduced from the Victoria Colonist and its correctness must be obvious to every one familiar with the results of over-assisted settlement.

A law to prohibit grain gambling has been enacted in Germany, which went into effect January 1, 1897. This is a new departure in law making and it is a matter that will elicit the attention of the whole civilized world.

"What time is it, my lad?" asked the American traveller of a small Irish boy, who was driving a couple of cows home from the fields. "About twelve o'clock, sir," replied the boy. "I thought it was more." "It's never any more here," returned the lad in surprise. "It just begins at 1 again."

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In 1897

The BAZAR, a thoroughly up-to-date periodical for women, will enter upon its Thirtieth Volume in 1897.

As a Fashion journal it is unsurpassed, and is an indispensable requisite for every well-dressed woman. Katharine De Forest writes a weekly letter on current fashions from Paris. In **New York Fashions**, and in the fortnightly pattern-sheet supplement, ladies find full details, directions and diagrams for gowns, wraps and children's clothing. Sandoz, Baude, and Chapuis draw and engrave the newest and finest Parisian designs every week.

The serials for 1897 will be: **The Red Bridge Neighborhood**, by Maria Louise Pool; and **Father Quinallion**, by Octave Thanet. Short stories will be constantly presented by brilliant writers, among whom are Mary E. Wilkins, Harriet Prescott Spoford, Marion Harland, Ruth McEnery Stuart, Viola Roseboro, and Margaret Sutton Briscoe.

What Women are Doing in various parts of the Union will form a series of special interest.

Other interesting features are **The Out-Door Woman**, devoted to healthful sports and pastimes; **Music**, a weekly critical summary of music in New York; **Amateur Theatricals**, Embroidery and Needlework, Ceremony and Etiquette, Good Housekeeping, **"What Girls are Doing,"** "Current Social Events," and Personals gleaned from original sources.

Women and Men. Col. T. W. Higginson will regularly continue his valuable essays.

Answers to Correspondents. This column is conducted for the benefit and convenience of readers, and all questions received are answered in rotation, as promptly and fully as practicable.

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CORRESPONDENCE.

While our columns are always open for the discussion of any relevant subject, we do not necessarily indorse the opinions of all contributors. Correspondents will kindly write on one side of the sheet only and in every case give the name—not necessarily for publication, but as a guarantee of good faith. All correspondence will be subject to revision.

Will Twin Cattle Breed?

This question has been frequently asked, but somebody wants it answered once more. Twins in this country are very rare, and whether they will breed or not depends very much on the sex. Once in a lifetime a case may happen when a heifer that was twin to a bull has offspring. But the regular rule is that she will never breed. Twin heifers are all right. A male twin should be castrated to avoid risks. Twin sheep, no matter how paired, breed well enough, and why cattle should differ is one of the mysteries of nature.

To Burst a Boulder.

I. W. wants information as to the best way of breaking up some boulders on his land. Where straw is abundant it is possible to roast the stone, and throw water on it, but this is a very slow and uncertain process. At idle times, a hole may be drilled into such stones and filled with water. Then drive into the hole a plug of dry wood, which, by absorbing the water, will swell and tighten. One night's frost will burst that block. It is just possible that the plug may be forced out of the hole by the action of the frost, and in that case the filling and plugging may need to be repeated. But if the plug holds good a gallon of water in one deep hole will burst up a 100-ton block of the hardest rock in Canada after one night's hard freezing.

Crab Apples.

J. D. Carswell, Rosstern, writes to ask the best kind of crab apples to try in that district. We are not aware of any one that has tried them in the Regina district, and it is doubtful if they will make a great success of it. To plant them at all is a pure experiment with more chances of failure than of success. A northern slope, on which trees have grown before, is the most likely place to try. No use buying from tree peddlers. Ontario crabs are not nearly so good here as those from Minnesota, that have a climate nearer our own. There used to be a good nursery at Grand Forks, but it may have got starved for want of patronage. Clarence Wedge, Albert Lea, Minn., is a safe man to buy from, but his goods must be sent by express, and the custom house may give bother. Mr. A. P. Stevenson, of Nelson, will be able in a year or two to fill all orders with home grown crabs of the best sorts.

Hay Loader.

Subscriber, Highview, wants information on the merits of the Rock Island Hay Loader. Has this machine yet found its way into Manitoba and, if so, please reply to this in course? The Nor'-West Farmer does not know anything about this machine, and will be glad if any reader can supply the information desired. Mr. Champion, at Reaburn, has a very good home-made loader.

A Curious Well.

Wm. Wenman, Souris, writes:—"Can you, or any of your numerous readers, give me the cause of the water in my well rising higher when the wind is east and southeast? Such is the case undoubtedly, both in winter and summer."

This is a rather puzzling phenomenon. In the town of Selkirk the wells rise some feet whenever a north wind blows. This is easy to explain, as there must be underground connection with Lake Winnipeg, by means of which the pressure of the water on the south end of the lake, in a heavy north wind, takes effect on those wells. The nearest water to the south east of Mr. Wenman's is Whitewater Lake, and it is difficult to see how that influence can reach so far.

Eighteen Ninety-Seven.

On this old world Time smiles once more,
Leaves one more infant at our door;
She comes, the "Angel of the years,"
A changeful face with smiles and tears,
With sun and shade, with joy and woe—
Like shifting clouds the landscape o'er—
Forth from her arms the infant year
Sends to the future without fear;
Go thou young year, and be thou strong,
Be great in thought, and deed, and song;
To bless the world be thy one care,
To vanquish evil, firmly dare—
Be gen'rous, loving, firm thy ways,
Whilst garnering months and weeks and days,
That Fame above thy resting place
Her choicest tribute there may trace—
A year so free from sin and shame
All time shall honor e'en thy name.

—Sarah E. Buchanan, in Texas Farmer.

The Jersey Bulletin says: The startling fact is disclosed by a committee of investigators that a few years ago the United States exported annually \$16,500,000 worth of cheese, while Canada exported only \$3,150,000 worth. Last year Canada exported \$13,000,000 worth, and the United States only \$3,000,000 worth. This enormous loss has been inflicted on America by two things—filled cheese and slaughter house butter. They have destroyed confidence in the honesty of American dairy products abroad, and have begun to work at home. Last year \$6,000,000 worth of cheese was imported into the United States. This is a valuable testimony to the soundness of the policy of the Canadian government, which prohibits, under severe penalties, every kind of adulteration of dairy products, and employs the best dairy skill to supervise and instruct the makers of butter and cheese.

On the third of February will be held one of the most important sales of high bred horses ever seen on this continent. Dr. Seward Webb, son-in-law of Vanderbilt, has decided to sell his unrivalled stud of Hackney's, which has been collected at great expense, and contains some of the finest specimens of the breed now alive. The stallion Matchless of Londesboro has won in England, Belgium and America, 36 prizes, including three champion prizes at New York and two challenge cups. He is a son of Danegelt and brother of Clifton 2nd, the present champion of America. Matchless was not shown at the last New York show, but some time ago Mr. Burdette-Coutts offered \$22,000 for him, to be taken back to England. Besides him, 60 of his progeny and many brood mares and trained carriage horses will be offered, and those who know anything of this wonderful collection will expect to hear of sensational prices.

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FIELD.

Successful Wheat-growing.

To be successful in wheat growing we must have suitable soil, climate and seed, and work our land on the very best methods. Seasons vary, and there are greater differences in our soils than most people have any idea of. But, roughly speaking, there are few countries indeed where wheat of such high quality can be grown with such ease and certainty as in the new northwest. But to get the best results we must have not only good soil, but it must be seasonably and properly worked at as low a cost as possible, and the more carefully we study our plan of action beforehand, the more likely are we to attain the result we work for and desire.

There are difficulties and drawbacks to be taken into account. The shortness of the summer season, want of rain at the right time, or for an extra length of time, frosts in the spring or harvest, and hail are the principal terrors of the western wheat grower. Some of these drawbacks our best skill can do little or nothing to avert; the harm from others we may to some extent modify.

But, though we have difficulties common to farmers in all countries, as well as some peculiar to ourselves, our soil is so rich and so easily worked, and the climate as a rule so favorable to wheat growing, that it has been, and must continue to be, our mainstay as a farming community.

How to manage our cultivation so as to avoid, as much as possible, the drawbacks incident to our conditions is the point to be always kept in view by every intelligent farmer. Sound, practical forecast is half the battle in farming as in most other callings, and want of proper skill and forecast has been a perpetual source of loss and disappointment. To avoid such disappointments, the first thing needed is a correct ideal to guide our procedure. Fifteen years of varied experience has brought us to a pretty well-defined idea of what and how to do, and what to avoid.

Plants require to be fed with as much skill as living animals, and it should be a point in our cultivation to prepare as much, and no more, plant food in any one year than our crop can turn to good account. Rank growth means slower growth and slower ripening, and as a rule a lower grade of the product in grain. Experience has shown us that to induce an early start, thrifty growth and early ripening, thorough cultivation followed by such treatment as will compact the subsoil is the best way to work. If good cultivation is given one year much lighter work will do the next, and one really good and deep plowing in four years may be enough, with shallower work in the intervening years.

Experience has also shown that on most soils the vegetable matter or humus will be pretty much worked out by a few crops of grain and some change in our methods must be adopted. There is an incalculable amount of mineral plant food lying inert and how to get the good of that after the more readily available vegetable matter has been used by our crops, is now a pressing question. On lighter lands even now some form of manuring is necessary. Green manuring is of doubtful virtue, and the only remedy is to manure from the stable, or try and lay the land down to some kind of seeded grass. Even where summer fallowing is now sufficient to produce good crops of grain for two or three years after, it is generally admitted by those best capable to judge that it is only a means to work out part of the mineral

plant food there stored up. In some cases a very moderate allowance of barnyard manure does great benefit, not only on its own account, but by acting as a solvent to the otherwise inert plant food there before. There is every reason to doubt the advantage of applying any kind of artificial manure here for some time to come. We have no evidence to show that two dollars worth of chemicals has ever yet produced one dollar's worth of extra wheat. It may be confidently asserted that skilful cultivation and home-made manure, if possible from well-fed stock, are the twin forces on which our future success as wheat growers must depend.

Rotation of crops, a strong point in the farming of older countries, can only be of limited application here. With beef at present prices, the feeding of rich food to stall-fed cattle means very much like eating their heads off, and the same financial result must, at present prices for labor, follow the raising of green crops. A few years' rest under grass, where that can be got to grow, is a very likely alternative, and the free introduction of Austrian brome grass is full of promise in this direction.

The fertility of our soil makes weed growth easy and rapid, and the prevention and destruction of weeds, especially of those classed as noxious, must be a matter of careful study to every aspirant after profitable wheat growing. Most of the weeds that are now a terror to us could, with clearer knowledge and moderate effort, have been suppressed long before they had attained the dangerous proportions they have now reached. Any scheme of wheat growing that does not embrace careful and constant study of the best methods of suppressing or keeping within safe limits our redundant weed growths, is most likely to end in loss and disappointment. Procrastination in dealing with our weed pests is supreme folly. It is only a question of time how long the dilatory and easy-going farmer will be able to keep his ground in the face of the enormous weed-producing power of our fertile soil.

Farm Yard Manure.

Dr. Somerville, a recent and popular lecturer on scientific agriculture, says that under all ordinary conditions, if the supply of farmyard manure is limited, it is much wiser to give a limited spreading to a larger area than to spread thicker on a smaller one. He states no reason for this opinion, but The Nor'-West Farmer has for years taught the same thing for this reason: The manure combines chemically with the mineral plant food in the soil, so fitting that also for the wants of the crop to be fed.

A recent report of the Wisconsin experiment station draws special attention to the great difference in the value of manures, caused by the different quality of the food from which the manure is made. It says:—

"The value of barnyard manure depends on the character of the feed, the kind of animals fed, and the method of caring for and applying the manure on the land. Rich feeding produces rich manure, since our most valuable farm foods are almost without an exception very rich in fertilizing ingredients. The amounts of these latter retained by farm animals in their body or made use of in their products will vary with different animals, and with the same animals at different periods of growth. Milk cows will void in the excrements about 75 per cent. of the nitrogen contained in the food, and about 90 per cent. of the ash constituents; young, growing animals will give somewhat similar quantities, while fattening animals will

void about 90 per cent. of nitrogen, and 96 per cent. of the ash materials in the liquid and solid ingredients. It may be stated, as a general rule, that at least four-fifths of the nitrogen of the food, and nine-tenths of the other fertilizing ingredients, will be obtained in the manure of farm animals. This being the case, and the fertilizing ingredients possessing, as we have seen, a definite money value, it is proper to speak of the manurial value of foods. If ordinary values of the fertilizing ingredients likely to re-appear in manure when the different farm foods are fed, be given to these, we obtain figures which in many cases will approach and sometimes even exceed the price ordinarily paid for the food by our farmers. Foods of a high manurial value should receive special attention from our farmers, and, other things being equal, should be preferred to foods of a low fertilizing value. Corn meal is, therefore, under otherwise similar conditions, worth less to the farmer than wheat bran, and linseed meal or cottonseed meal are worth more than either. Farmers should consider the amount of fertility contained in the various feeding stuffs, more than has been done in the past, in order that they may be better able to maintain the fertility of their land.

Threshing Records.

The following are a few very creditable records gleaned from the local papers:—

The Neepawa Press retorts that in their district McKee's gang threshed 1,920 in one day. Sam Farrell's 2,100 bushels one day, and 1,300 bushels another day in an afternoon at the farm of P. J. Stewart, just west of the town. Of course, this has to be taken into consideration: At Carberry wheat is averaging from 12 to 18 bushels to the acre, while at Neepawa it averages from 18 to 25 bushels to the acre.

The Boissevain Globe says:—A threshing report of considerable magnitude was conveyed to this office on Saturday last, which some gang should beat before the season closes. Here it is: Rube Hill's threshing outfit put through 2,012 bushels of wheat in ten hours. This is accounted for when it is known that Bob Guest was one of the feeders. Who can beat this?

For threshing records A. E. May, Carberry, with his cyclone threshing outfit, takes the lead. For three weeks the average has been 1,700 bushels a day, and last week, on the farm of Mr. James Polworth, they threshed 1,985 bushels of wheat, the average yield being about 26 bushels.

Now that farmers are through cutting, and are progressing satisfactorily with their stacking, stories of feats in the harvest field are going the rounds. It is doubtful if any can beat that of C. Gowan, of Brookdale. He is a rustler. He cut 400 acres, taking 1,050 lbs. of twine. The binder was run steadily until 12, midnight, every night.

McCorquodale's outfit at Wassewa threshed in one day over 2,100 bushels of wheat for R. Ross, 35-2-21.

Isaac Dobson threshed on the farm of James Cowan, on Friday, October 9th, 2,320 bushels of No. 1 hard wheat. This is the best day's threshing yet reported this season, and if any better records have been made readers would like to know where and for whom. Last year Mr. Dobson threshed 2,080 bushels for Mr. Cowan in a single day. This year the wheat did not turn out so well, but if it had, a record of 3,000 would have been made.

Mr. Cowan is so well pleased with Mr. Dobson's work that he would pay him a half a cent a bushel more rather than give his job to another man—Boissevain Globe.

Experience with Brome Grass.

Thomas Copeland, of Saskatoon, is one of the oldest settlers in that settlement, and his experience with Austrian brome grass is well worthy of notice by everyone in search of a reliable cultivated pasture. It is more difficult to get a good catch of any kind of grass in the west than in eastern Manitoba, and Mr. Copeland gives his own experience with a small patch of brome in support of the very gratifying record made by that grass on the experimental farm at Indian Head. He says:— I have grown it for five years. This little patch did so well that in 1895 I concluded to sow five acres of oat stubble with the grass and nothing else, and the result has fully met my most sanguine expectations. The amount of seed required for an acre is fifteen pounds. I sowed by hand and harrowed it in. During the first summer there was not sufficient growth to allow of it being cut, but it is a rule with all perennials that they will not do much the first year. I had, however, a great crop of annual weeds towards the latter part of the season, and these I cut down with the mower as near the ground as possible. Next year the grass started early in the spring, and kept growing very rapidly without a weed to be seen, attracting the attention of the passers by with its heavy green foliage till cutting time, when it stood a fine crop of from three and a half to four feet high. At the solicitation of neighbors, who wanted seed, I allowed the whole crop to ripen, and when it was cut with the binder, and the sheaves set up, it looked, except for the color, just like a good crop of oats harvested about a month earlier than usual. The aftermath was heavy, and came in to great advantage in the fall, as the cows grazed on it almost exclusively for some time, and enjoyed the rich, green food when all the prairie grass was sere and dry. The result was shown in the milk and butter, both quantity and quality, the butter being especially rich and of a beautiful color, like June butter. This effect we have found also from feeding the hay since the cows were stabled, though it would doubtless be much more apparent with hay cut at the proper season, say three weeks earlier, than from this ripened grass, from which seed has been threshed with a flail. Even this hay, however, is very nourishing, and is very much relished by both horses and cattle. The local demand for seed on the part of the farmers who have seen this grass in all its stages, speaks volumes for it as a forage crop.

Its advantages are these:—

1. Hardiness; the most extreme frost will not kill it, nor even injure the roots.
2. Earliness; it is among the first of grasses to show green in the spring, and it rushes on so that the hay can be gathered and out of the way long before harvest, before even wild hay is ready for cutting, just at the season when there is least to do on a farm.
3. Reliability; once established, it seems a sure crop and stands drought well. It has shown no signs of failure in the last four years.
4. It can be grown just where you want hay to be handy, so as to save hauling long distances, and is a time-saver both in that and in the other fact that as compared with an annual forage crop it requires only once sowing in quite a number of years, and even then less preparation than almost any other crop. I intend to treble the area I have of this grass, and two farmers take four hundred pounds of seed between them.

The country supplies the city with fresh blood and strong brains, as well as bread and meat.

Ontario Farmers' Institutes.

WATER AND PLANT LIFE.

The report of the superintendent of Farmers' Institutes for Ontario for 1895-6, contains pith and marrow enough for many an hour's profitable study. Besides the ordinary details of information, naturally looked for in such a report, there are about 70 papers on almost every subject that can claim the attention of a progressive farming community. Education, cultivation, stock breeding and feeding, dairying, horticulture, good roads, domestic economy, etc., etc., are all dealt with by men highly fitted by knowledge and experience to do justice to them. As a sample of the condensed information to be found in the 250 octavo pages of this report, the following paper by J. Hoyes Panton, professor of botany in the Ontario Agricultural college, may be taken as a specimen:—

The importance of water to plants is observed when we consider its influence upon plant life. Among its most important uses are the following:—

1. It serves as food by entering into the composition of compounds prepared in the plant, such as starch, sugar, etc. This occurs when the carbon dioxide of the atmosphere enters the plants through the leaves. From water and carbon dioxide, the green coloring matter of the leaves (chlorophyll granules), through the influence of light, is able to produce starch. This may be considered the crude material from which several other compounds are formed in plants.

2. It acts as a carrier of substances in solution, and this transfers compounds to all parts of the plant, where any form of circulation takes place.

3. It performs an important service in maintaining the firmness of the cells, especially in plants without woody tissue. When plants wilt it is largely due to the withdrawal of water from the cells, and if not gone too far the flaccid leaves, etc., may be restored by furnishing the plant with more water. Thus we see many plants owe their form largely to the presence of this liquid.

4. It also serves to a considerable degree in modifying the temperature of the plant, by rendering it less liable to be affected by sudden changes of heat and cold.

5. Its solvent power in the soil is of great importance to plants by rendering substances in it soluble, and thus in a condition to be taken into the plant.

Plants cannot absorb solid substances. Their food must either be in a liquid form or gaseous. Keeping in view the importance of this common compound, how necessary it become to preserve it. In many cases this is not done, and vast quantities of water are permitted to waste instead of being employed in the growth of useful plants. There is no doubt that if the conservation of water was more considered and better understood, we would sustain less damage to our crops during the time of drouth. We shall now suggest some ways by which this may be done:—

1. Mulching is followed by many, especially by gardeners and fruit growers, for the purposes of saving the water in the soil. This checks evaporation, and thus retains moisture among the roots of the plants.

2. Tillage, by constantly stirring the soil, makes the surface in such a condition that it prevents evaporation, and in some respects the finely divided surface soil acts as a mulch. It is common practice now among gardeners and nurserymen to keep cultivating during a dry time, and this should be followed more by farmers. The practical man finds to-day that constant cultivation serves two objects; one, the

destruction of weeds; the other the conservation of water in the soil.

3. Drainage also serves to keep the soil in such condition as to retain sufficient moisture to withstand drouth. It gets rid of "free water," useless to plants, and even injurious, and preserves that form best suited to plant growth.

4. Subsoiling puts soil in a condition that enables it to keep moisture and withstand the effects of drought. This has been tested at some experiment station with most favorable results.

5. Destruction of weeds is of great importance in connection with the maintaining of moisture in the soil. Very few are aware of the quantities of water that are thrown into the atmosphere by plants, and consequently the growing of such as are not needed, is permitting a waste of water which should be passing into plants from which we desire to be getting useful products. In discussing objections against weeds, we usually enumerate the following: They involve extra labor, render fields unsightly, add impurities to the grain, rob useful plants of their food, smother important plants, afford sheltering places for insects, and are especially wasteful of water. This last is one of the worst and should receive the attention of farmers. During the summer of 1895, the writer conducted some experiments with a view to ascertain to what extent some weeds obtain water from the soil and pass it into the air through their leaves. Two species of plants were selected, the common mustard and the pigweed. These were placed in large pots and put in the garden, where they were surrounded by conditions much the same as in the field. A check pot with no plant, but in other respects the same as the others, was placed beside them. During the time of trial, the average amount of water thrown off daily by the mustard was fourteen ounces, and that by the pigweed ten and a half ounces. The highest amount was on a dry, bright day with light wind, when the mustard showed nineteen and a half ounces, and the pigweed thirteen and four-fifths. On a hot sultry day the amounts were seven and six and a half ounces respectively. Some observations were made during four days of more or less rain, when both plants indicated a loss of six and a half ounces each. This is a large amount of water to have passing through useless channels.

Taking an average of ten plants to the square yard, and calculating the number upon an acre, the mustard plant would throw off twenty-one tons of water, or 4,235 gallons daily. Other observers have experimented with the sunflower and ascertained a loss of 25.30 ounces daily by evaporation from its leaves; and in the case of the cabbage from nineteen to twenty-five ounces. Another way of expressing how much water is used up in allowing weeds to grow, is to ascertain the number of pounds of weed grown and consider that each pound of dry substance has required from four to five hundred pounds of water in its production. With such data before us we are to conclude that a very serious case is made out against allowing weeds to grow among our crops, and that the time has come when it would be wise for farmers and others interested to wage war against weeds by thorough cultivation, so that the water of the soil may be used in the growth of useful plants, especially in times of drouth.

The Turtle Mountain (N. D.) Star claims that John Palm, one of the Finlanders who settled near Pictou last spring, mowed forty tons of hay last summer with a scythe and stacked it in a single stack with a pitchfork without a wagon or cart.

Brandon Experimental Farm.

We are able this month, by courtesy of Mr. Bedford, to give an important installment of the crop returns from this farm for 1896.

A most unusual feature of the past season was the prevalence of rust at the farm on both wheat and oats. The spring opened unusually late and wet, very little if any grain was sown in April, and the rainfall of May was several inches above the average. This was followed by high temperatures, producing rust on the grain plant before it was a foot high. The rust soon spread from blade to stalk and from stalk to head, reducing both yield and weight. Moist, rich land suffered most; lodged grain was also more injured than the stiff straw fields. These exceptional conditions have somewhat changed the comparative productiveness of many varieties, placing, for instance, the White Fyfe considerably ahead of the Red Fyfe, rust apparently not affecting the white as much as the red.

Another feature of the year was the almost entire absence of smut on wheat. In the smut tests of this grain the untreated smutty samples being just as free as the treated. Evidently the season was not favorable for the wheat smut plant. Oat smut, however, was nearly as plentiful as ever, and some very suggestive tests were made. These will be published later on. As the results obtained from only one year's tests are apt to be misleading, the average returns of both wheat and oats from tests covering several years are also given.

WHEAT.

Sown May 8th; size of plots 1-10 acre; soil black loam; summer fallowed.

VARIETY.	Days in maturing	Charac-ter of straw.	Kind of head.	Yield per acre.	Weight per bu.	Rusted.
Rio Grande	109	Weak	Be'rded	38-30	60	some
Goose	126	v weak	"	38-30	59	badly
Monarch	116	Fair	Beardls	32-30	58	some
Hungarian Mountain	119	"	"	30-50	60	badly
Pringle's						
Champlain	109	Weak	Be'rded	29-20	58	"
White Fyfe	119	Fair	Beardls	29-10	58	little
Old Red River	118	Stiff	"	28-10	60	badly
*Huron	109	Fair	Be'rded	28-10	57½	"
*Advance	109	Weak	"	28-10	58	"
Colorado	109	v weak	"	27-50	59	little
*Crown	109	Weak	"	27-40	58	badly
Velvet Chaff	119	Stiff	Beardls	27-40	58	"
White Russian	109	Fair	"	26-40	58	some
Red Fyfe	119	"	"	26-40	59	little
Herrisons						
Bearded	108	v weak	Be'rded	26-30	59	badly
Wellman's Fyfe	116	Stiff	Beardls	26-10	60	"
*Beauty	119	"	"	25-50	58	"
*Countess	109	Fair	"	25-20	60	"
*Vernon	108	v weak	Be'rded	25-10	58½	"
White Connell	116	Fair	Beardls	25-00	59	"
*Stanley	109	Weak	"	25-00	58	"
*Captor	109	Fair	"	25-00	58	"
*Dufferin	109	Stiff	Be'rded	24-30	58	"
Emporium	112	"	"	24-30	59	"
*Alpha	112	Fair	Beardls	24-30	58	"
Red Fern	118	Stiff	Be'rded	24-20	59	some
Gehun	109	Varies	Beardls	24-10	57½	badly
*Dawn	103	Fair	"	24-10	60	little
Dion's	119	"	Be'rded	24-00	58	badly
*Blenheim	109	v weak	"	23-40	58	some
Campbell's						
White Chaff	112	Rank	Beardls	23-30	58	badly
*Progress	109	Fair	"	22-30	58	"
*Admiral	107	Weak	"	22-30	58	"
*Rideau White						
Chaff	109	"	"	21-40	55	"
*Percy	116	"	"	20-40	56	"
*Beaudry	108	"	Be'rded	19-20	55	"
Ladoga	109	Fair	"	18-50	56	"
*Rideau Red						
Chaff	109	"	Beardls	18-40	54	"
Golden Drop	109	v weak	"	18-30	57	"
Black Sea	104	Weak	Be'rded	18-30	55	some

*Varieties marked with an asterisk are cross-bred kinds.

Many complain of small yields of oats, but in spite of rust and lodging the returns of oats on the Experimental Farm were above the average in both large yields and small plots. The effects of rust were, however, even more apparent with oats than with wheat. Many rank-grow-

ing European varieties, which in other years have given fair returns, this year only yielded a few bushels of mere hulls. Among these are Doncaster, Scottish, Tartarian, Dunn and Hopetoun. All these were very badly rusted and never filled properly. That magnificent variety, the Banner again heads the list with an even hundred bushels per acre, and even this large yield was exceeded in other parts of the farm, reaching 115 bushels in one place. Although this variety appeared to be badly rusted, neither yield nor weight was affected, as were many others.

OATS.

Sown May 14th; size of plots 1-10 acre; soil black loam; summer fallow.

VARIETY.	No. of Days.	Charac-ter of growth.	Kind of Head.	Yield per acre.	Weight per bu.	Rust.
Banner	104	Fair	B'nch'g	100-00	35	badly
Early Golden	110	Weak	"	88-18	34	some
Prolific	86	"	"	87-12	38	badly
Winter Grey	99	v weak	"	85-00	35	"
Menonite	96	"	"	82-22	37	v bdy
Holstein Pro'fic	107	Stiff	"	80-30	37½	some
Scottish Chief	98	v weak	"	80-00	35	v little
Abundance						
American						
Beauty	104	Fair	"	78-18	35	some
Improved						
Ligowa	104	Weak	"	78-18	36	badly
New Electric	97	Stiff	"	76-26	38	"
Golden Beauty	112	Fair	"	76-26	33½	some
Emporium	111	Weak	½ Sided	76-26	32	badly
Golden Giant	119	Fair	Sided	76-06	33½	v bdy
White Schonen	110	"	B'nch'g	75-20	36½	little
Victoria Prize	94	"	"	75-20	38½	v little
Master	110	"	"	73-18	32	badly
Bavarian	104	"	"	73-08	34	little
Wallis	110	"	"	72-82	34	badly
Saltzer's						
Nameless	97	"	"	72-22	36½	"
Siberian	119	Stiff	Sided	71-06	33½	"
Buckbee's						
Illinois	110	Fair	B'nch'g	70-20	35	little
Wide-Awake	110	Stiff	"	70-20	34	v little
White Russian	110	Fair	"	70-20	36	badly
Brandon	113	"	"	70-00	33	"
Rennie's Prize						
White	94	v weak	"	68-18	40	"
Bonanza	96	Weak	"	68-08	38	"
Challenge	98	Fair	"	67-32	38½	"
Russell	110	"	"	67-22	32	"
Miller	110	Stiff	"	66-26	33½	some
Flying Scotch-						
man	96	Weak	"	66-26	35½	badly
Abyssinian	110	"	Sided	65-00	34	v bdy
Imported Irish	98	"	B'nch'g	64-04	37	little
Hazlett's						
Seizure	103	"	"	62-32	34½	badly
Welcome	97	Fair	"	62-02	36	little
Cream Egypt'n	97	Stiff	"	62-02	38	"
Early Archangel	102	Weak	"	61-15	37½	"
Poland White	101	v weak	"	60-30	35	badly
Rosedale	110	Weak	½ Sided	60-30	34	v bdy
Columbus	105	v weak	B'nch'g	60-30	35½	little
Early Blossom	105	Weak	½ Sided	58-18	37	badly
Prolific Black						
Tartarian	110	Fair	Sided	57-32	31	"
American						
Triumph	113	Stiff	B'nch'g	57-32	35	some
Oderbruch	110	Fair	Sided	57-22	35	badly
California Pro-						
lific Black	113	Weak	"	57-02	32½	"
White Monarch	110	Stiff	B'nch'g	56-16	33	little
Early Gothland	113	Fair	½ Sided	56-06	35	"
Oxford	111	"	B'nch'g	55-20	32	badly
Coulommiers	120	"	"	54-14	32	"
Joanette	111	Weak	"	54-14	35	"
Cromwell	113	"	"	52-32	31½	"
Medal	119	Fair	"	50-10	33½	v bdy
Early Maine	116	"	½ Sided	49-04	33½	badly
Prize Cluster	98	Stiff	B'nch'g	47-22	33	"
King	105	"	"	47-02	34	"
Olive	112	Fair	Sided	45-00	22	"
Giant Cluster	112	Stiff	"	44-24	31	"
Sandy	113	Weak	B'nch'g	44-14	30	"
Early Etampes	119	Fair	Sided	44-14	26	"
White Wonder	86	"	B'nch'g	41-26	39	"
Pense	113	Stiff	Sided	39-24	29	"
Doncaster	119	Fair	B'nch'g	37-12	27	"
Scottish Tar-						
tarian	119	Stiff	Sided	35-09	28	"
Dunn	119	Fair	B'nch'g	23-28	28	v bdy
Scotch Hope-						
toun	113	"	"	16-26	25	"

Average results of four years' tests with eighteen varieties of wheat.

VARIETY.	Years included.	Average yield per acre.	Average days maturing.
Goose	1893, '95, '96	38	124
Preston	1893, '94, '95, '96	36	113
Rio Grande	"	35	112

VARIETY.	Years included.	Average yield per acre.	Average days maturing.
Red Fyfe	1893, '94, '95, '96	33	117
White Fyfe	"	33	117
Pringle's Champlain	"	33	113
Herrison's Bearded	"	32	114
Old Red River	"	31	116
White Connell	"	30	116
Red Fern	"	30	114
Stanley	"	30	113
Hungarian Mountain	"	30	117
Crown	"	29	113
White Russian	"	29	116
Wellman's Fyfe	"	28	117
Campbell's White Chaff	"	27	113
Colorado	"	27	109
Ladoga	"	26	110

Average results of five years' tests with fifteen varieties of oats.

VARIETY.	Years included.	bush.	Weight per bu.
Banner	'92, '93, '94, '95, '96	88	105
Abundance	"	80	105
Holstein	"	75	106
Rosedale	"	74	105
Victoria Prize	"	73	104
White Russian	"	72	108
Archangel	"	71	104
Golden Beauty	'93, '94, '95, '96	70	110
Abyssinia	'92, '93, '94, '95, '96	70	108
Improved Ligowa	"	70	106
Early Gothland	"	68	107
Siberian	"	64	116
Black Tartarian	"	61	114
Columbus	'93, '94, '95, '96	59	106
Welcome	'92, '93, '94, '95, '96	59	100

A Sample of Many Such we Receive.

Geo. Lawley, Melita, Man., in renewing his subscription to the Nor'-West Farmer, writes as follows: "I may say that I greatly appreciate the Nor'-West Farmer. I have found much valuable information in it, both with regard to care of stock and working my land. As a result of following its information, we have been able to make 390 lbs. of butter from Jan. 1st to December 19th from two common cows, the one milking 21 months and the other 17. I also bred a Berkshire grade sow to a thoroughbred Yorkshire boar, from which I raised some fine pigs, three of them dressed 220 lbs. each at six and a half months' old. I think that if the farmers of this country would take the Nor'-West Farmer and read the experience of their fellow farmers, there would be less dissatisfaction in the country. Wishing you success in your publication."

For Over Fifty Years

MRS. WINSLOW'S SOOTHING SYRUP has been used for over fifty years by millions of mothers for their children while teething, with perfect success. It soothes the child, softens the gums, allays all pain, cures wind colic, and is the best remedy for Diarrhoea. It will relieve the poor little sufferer immediately. Sold by Druggists in every part of the world. Twenty-five cents a bottle. Be sure and ask for "Mrs. Winslow's Soothing Syrup," and take no other kind. 1840

If you want a beautiful book, telling all about how to raise poultry and the money that can be made upon a small or large scale, and all about the wonderful Von Culin Incubators, which they send on trial and do not ask you to pay a cent until after you try it, send five cents to the Von Culin Incubator Co., Delaware City, Del., for their latest catalogue. The book is full of fine engravings and beautifully printed on fine paper. The rich cover printed in colors represents a farm yard with a pretty girl surrounded by all kinds of poultry.

The Portland Mfg. Co., of Portland, Mich., are the sole manufacturers of Terrill's Perfect Washing Machine, which has met with great success, which is due solely to the fact that they guarantee their washer to do the work just as represented, and in case any purchaser should be in the least dissatisfied, the company will gladly refund their money. The financial standing of the concern is such that we can honestly recommend them to our readers. Not only has their excellent invention brought ease and economy into over one hundred thousand homes, but many agents have received prodigious returns by handling their washer. The sale of this washer is very profitable to agents, and the manufacturers can refer you to hundreds that have made small fortunes handling it, and it will be to the interest of those wishing profitable employment to write this concern for proofs backing up their guarantee and statements.

Institute Work for January.

Mr. S. A. Bedford will visit and speak at the following places this month. Subjects: "1896 as a School Master;" "Grasses for Manitoba;" "Fruits, Flowers and Ornamentation." Elkhorn, 11th; Virden, 12th; Oak Lake, 13th; Douglas, 14th; Pipestone, 16th; Melita, 18th; Deloraine, 19th; Boissevain, 20th.

Stall Feeding.

This year is likely to show a great shortage in the number of stall-fed cattle from the farms of Manitoba. Those who used

this year the money cost of feed is double its last year's quotations. Bran is a choice beef-producing feed, and last year farmers could buy it at the nearest mill at \$4, or a trifle higher. This year it is worth double the money, and screenings, well ground up, with a free sprinkling of pig weed seed included, are worth \$12. Oat shells, a thing of rather low feeding value, are ground up and freely bought, and the profits from by-products of country mills are this year higher than ever before. The men who held over oats from last year are now in clover, and getting fancy prices for all they care to sell, but those who want to do any feeding are bound to do so at almost a sacrifice.

kernels, while perfect and free from shrinkage, appear to have ceased growing before attaining full size, and that in several fields already threshed out, which he expected to yield 16 to 18 bushels to the acre, he has obtained but 6 to 8 bushels.

In answer to a question, Mr. Fisher, the Minister of Agriculture, stated that the buildings alone on the Experimental Farm at Ottawa had cost \$176,000. The residence of the director in itself cost \$12,500; barns and stables, \$22,124; museum and laboratory, \$15,231; greenhouse, \$5,566; poultry buildings, \$5,009; dairy and pig-gery, \$4,495; implement building, \$4,835; root house, \$1,111; four houses for staff, \$22,291; three small cottages, \$5,919; sheep building, \$5,085. This only



TIRED OUT.

to make a specialty of grain feeding are many of them planning to hold over their stock in good condition, with a view to finishing on grass, and altogether the prospects for any quantity of well-finished beef in May are poor.

There are two reasons for this. In the first place there is a pretty general conviction among experienced feeders that at present rates there is no money in the business. No value is put on the manure in this country, and at the figures now going for fat cattle, there is more to be made by selling the feed than by putting it into the cattle.

Another reason for this falling off in stall feeding is the high price of feed, as compared with last year. The district of Scotia, north of Virden, may be referred to as a case in point. Some splendid barns have recently been put up there, but

This year, as in former years, the Rose Valley district, north of Indian Head, well maintains its supremacy as "the" wheat growing district par excellence of the Territories. Our worthy reeve, Mr. W. H. Stephens, on the conclusion of a week's threshing, found himself possessed of 11,500 bushels of wheat, besides 2,500 bushels of oats. Of the 350 acres of wheat, 85 per cent. yielded 40 bushels to the acre. Mr. R. Todd had over 7,000 bushels of wheat from 270 acres, over 4,000 bushels coming off 100 acres.

A. R. Dalrymple, owner of the great Dalrymple wheat farm in North Dakota, says that according to the threshing results from part of his crop, the yield of wheat in the Northwestern States this year will not be over two-fifths that of last year. Mr. Dalrymple says that the

represents first cost. The total expenditure on these buildings to date has been \$176,000.

It is sometimes interesting to compare the results of our rudimentary processes of farming with those attained on the best class of old world land and by the best modes of agriculture. The turnip crop on the Scottish and English border has this year been very fine, and samples of Lincolnshire Reds were shown weighing from 17 to 22 lbs. A soft-fleshed turnip at that weight must be very large, but the best Swedes shown at our local shows have this year made as good weights as those above referred to.

Every man has his chain and clog, only it is looser and lighter to one than to another; and he is more at ease who takes it up and carries than he who drags it.

The February Meetings.

February is the usual time of meetings of all the associations connected with agricultural stock and products. This year all the available time in the third week will be taken up with the meetings of these associations. The poultry men hold their show, which is expected to be of extra size and merit. The Dairy association will fill up nearly all of the 16th and 17th, with Dairy Commissioner Robertson as the leading attraction. The meeting of horse breeders will take place on the afternoon of the 17th. The cattle breeders will take the 18th and on the evening of that day a joint meeting for all will be held in the Grand theatre. On the 19th the sheep and swine breeders hold their gathering. The arrangement of local trains makes it impossible to gather all the representatives on Monday evening, or that night might have been utilized for one meeting. As the case stands there will not be enough time to do justice to all the papers and speakers, but the programme committee will do its best to make the work of the week both interesting and profitable to every farmer who can manage to be present. The details for each meeting are not yet fully ready for publication, but the week will be full of attractions for every one who has the good fortune to be present.

A Southwestern Institute Trip.

Elsewhere in this issue will be found the addresses given by Messrs. Torrance and Macdonald along the Souris river. The attendance ran from 40 to 15, and only a few of the questions asked and answered can be noticed here. At Melita, Mr. Dobbin bore testimony to the value of the Baby No. 2 Laval separator used by him, but complained that the prices were much too high. Dr. Torrance, being asked if it was possible to bring a teat into use again after it had got stopped, said it depended on the nature of the obstruction. A contracted milk duct might with care be dilated by using a tube, sometimes by a surgical operation. Some music was supplied in the evening. Asked at Napinka about dehorning, Dr. Torrance said it was better not to bandage after the job was done, as the bandage, if it stayed on, would collect blood, leading to subsequent injury. To the question whether if one quarter of the udder were injured, would the cow give as much milk from the rest as to make up for it, Dr. Torrance said the cow would give more milk in proportion from the teats left good. A cow should be milked at least twice a day, if best results are wanted. If a cow gave lumpy milk, pepsin might be injected to dissolve the obstruction.

Manitou has had for years a very good farmers' club, but lately there has been a question of forming an institute. Mr. Lister, the English separator manufacturer, was present, and gave an address on dairy topics. Next day the party drove round visiting some of the fine stock buildings for which this district is celebrated. Mr. Macdonald was the only speaker at Nelson and Morris. He urged the farmers to give better support to their cheese factories. There was a hopeful outlook for the cheese market in future years. A shortage of 165,000 boxes of cheese was met with this year, and new markets were opening up every year for our goods. A good discussion followed, and it was a lively meeting.

Wheat is now being hauled from Missouri river points to Chicago (500 to 800 miles) for 9 cents per 100 lbs. On the railroads of New South Wales a bushel is hauled 500 miles for 9 cents.

American Farmers' Congress.

A "National Farmers' Congress" has been held at Indianapolis, in which the united wisdom of the delegates has tried to formulate some measures which in their opinion would favor the interests of the farming community of the States. Among these measures are the careful exclusion of undesirable immigrants, the connection of the great lakes with the Mississippi by means of a ship canal, so fostering internal trade; the admission of women as voters, and the more rigorous enforcement of the laws against trusts and combines. But their main scheme for increasing the value of farm produce lies in the direction of extreme protection. They call for the restoration of the bounty of 2 cents a pound on all home made sugar, the restoration of the duties on foreign wool, and enforcing prohibitory duties on woollen rags, shoddy and adulterants of other kinds, and the building of a ring fence of customs duties so framed as to exclude or minimize the consumption of all foreign-grown articles that would come in competition with the produce of American farms. Of course, this happy family scheme by which the great Yankee republic is to grow rich and prosperous by feeding and clothing one another with articles grown only in America is formulated with sublime indifference to the first principles of trade. Nearly every article the American farmer has to sell has its price fixed in the markets of free trade England. Prices for wheat and beef and cotton are made not in Chicago and New York or Indianapolis, but in Glasgow and Liverpool and Manchester. Should the idea of a British Zollverein suggested by Mr. Chamberlain and supported by Sir Donald Smith be made a part of the scheme of consolidation of the great British empire, then the American farmer would have to pay for the privilege of selling in English markets, just as he wants us to pay for the same privilege when we have anything to sell.

C. Wood Davis, a level-headed American farmer of Republican political views, thus derisively writes of the benefits likely to accrue from nursing the "home market": "And this home market? Lo, these forty years and more this "home market" gag has been the pabulum with which our party's leaders have sweetened the farmers whenever votes were in demand. There was never a more illogical, not to say idiotic, party cry as addressed to the farmer, unless it be the twin fallacy of "reciprocity," which has yet to create a market for a single "bushel of wheat or barrel of pork." The "home market," in the partisan sense, never brought the American farmer higher prices for his wheat or cotton, and never can while we produce a surplus that must be marketed abroad. It is the "world demand" that makes the price, and always will until that somewhat remote day when we shall have only sufficient of these products for "home consumption." Whenever the American grower of wheat or cotton has received a high price, it has resulted neither from the operations of tariff laws, nor the abundance or scarcity of money, but from the meagreness of world supplies. Whenever the world's supply of either wheat or cotton has been scant, foreigners have come forward and bid eagerly for what we had to spare—as they are doing now—and prices have advanced as they would not had we been forced to rely wholly upon the vaunted home demand. Neither the opening of domestic mills nor mints will absorb our great surpluses of wheat and cotton; hence to talk of a home market as the one the farmer must look to for good prices is the baldest of false political pretenses."

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WHICH CURED HIM AFTER EVERYTHING ELSE FAILED.

Painful diseases are bad enough, but when a man is slowly wasting away with nervous weakness, the mental forebodings are ten times worse than the most severe pain. There is no let up to the mental suffering day or night. Sleep is almost impossible and under such a strain men are scarcely responsible for what they do. For years the writer rolled and tossed on the troubled sea of sexual weakness until it was a question whether he had not better take a dose of poison and thus end all his troubles. But providential inspiration came to his aid in the shape of a combination of medicines that not only completely restored the general health, but enlarged his weak, emaciated parts to natural size and vigor, and he now declares that any man who will take the trouble to send his name and address may have the method of this wonderful treatment free. Now when I say free I mean absolutely without cost, because I want every weakened man to get the benefit of my experience.

I am not a philanthropist, nor do I pose as an enthusiast, but there are thousands of men suffering the mental tortures of weakened manhood who would be cured at once could they but get such a remedy as the one that cured me. Do not try to study out how I can afford to pay the few postage stamps necessary to mail the information, but send for it, and learn that there are a few things on earth that although they cost nothing to get they are worth a fortune to some men and mean a lifetime of happiness to most of us. Write to Thomas Slater, Box 2047, Kalamazoo, Mich., and the information will be mailed in a plain sealed envelope.

1691



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	Regular Price.	With Nor'-West Farmer.		Regular Price.	With Nor'-West Farmer.
Breeders' Gazette, Chicago	\$2 00	\$2 00	Weekly Sun, Toronto	\$0 50	\$1 00
Hoard's Dairyman, Fort Atkinson	1 00	1 50	New York World (thrice-a-week edition)....	\$1 00	\$1 40
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Weekly Free Press, Winnipeg	1 00	1 50	“ Bazar, “	4 00	4 00
Semi-weekly Free Press, “	2 00	2 50	“ Round Table, “	2 00	2 25
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“ Nor'-West, “	1 00	1 50	Outing, “	3 00	3 00
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THE NOR'-WEST FARMER, Box 1310, Winnipeg.

AMONG THE FARMERS.

An Institute Trip—Blyth to Arrow River.

In the middle of December I had a busy week working for the Central Farmers' Institute. The weather was tolerable, but the roads about the worst I have ever gone over. As a rule our winter roads keep up to the mark of fitness, but evidently there is nobody prepared to do a little mending in a bad time, even when an hour's work would save several dollars in sleighs, harness and horses, not to mention cuss words. On this trip I found very little interest in stock feeding, which at present quotations for beef is quite natural, and wheat has become as full of interest as ever it has been. After what we have gone through the last three years, we can now manage to raise wheat 10 cents cheaper than when it was last at the 60-cent notch, and even with the short but pleasant spurt made since September, I found many of my most reliable friends absent from our discussions—gone to Ontario, or further, for a much-needed and well-earned holiday. One night on the main line the car fairly swarmed with children and their mothers on their way to visit the old scenes of the parents. A change much-needed by many an over-worked mother on our prairies.

At Blyth we discussed, in a free way, cultivation problems, but one or two inquirers were rather exacting. I think I can show as well as most men how to take a lot of good work out of a horse, but I cannot show how either a horse or a man can clean foul seeds out of the ground any faster than they choose to come up. It is one of the special features of all weeds that the seed will come year after year in a leisurely way, and no skill of ours can coax them to start all at once in the very best of years. One year's carelessness about weed-seeding means constant employment for several years after, no matter how careful we may be. This is a strong argument for keeping a vigilant outlook on all our farms for strange weeds.

One man with about one cow on his place wanted light on the use of green manuring in keeping up light land to a profitable degree of fertility. There are good big patches in that district where a few years' continuous cropping will reduce production below working expenses. Unless some manure, say ten loads an acre, can be put in such land to amalgamate with the mineral plant food already there, I see nothing for it but to let it lie idle for a few years. Clover we cannot grow, buckwheat has got little hold here, and peas are the only thing we can grow that can take food direct from the atmosphere. I fear it will take more than 60 cents for wheat to maintain any continuous system of cultivation on such light land as I speak of, but I would like exceedingly if some one would plow in two bushels of peas to an acre of such land and harrow and roll it down. An ordinary furrow four or five inches deep would not be too deep to sow peas on such land, and if followed by wheat the rotation is the best I can think of for such soils. Will somebody try the plan?

At Rapid City, where Mr. A. P. Stevenson joined me, we had a poor turnout, as nobody seemed to know of our meeting. On our way out we spent an hour with Henry Nichol, whose opinion on most things I have for the last dozen years set a very high value on. He has raised about 20 Clydesdales from local sires and pure-bred mares, and a few Shire crosses from the same mares. Perhaps it is prejudice that makes me favor the straight bred

celts the most. This is the only case within my knowledge where a farmer has been able to sell all he wanted of his young horses to his own near neighbors, and this one fact is the strongest testimony to their owner's capacity as a breeder and feeder. I use this last word advisedly, for the best blood in the world needs backing in the shape of good oats, if it is horse flesh that is wanted. At Hamiota, later in the week, George Rankin showed me a team which beat Mr. Nichol's last year at Brandon, but the Nichol lot is not all in the show window. He can cut and come again, and raises a pretty nice driving team at the same time. While all this is true, and very much to the credit of Mr. Nichol, I have good authority for saying that after many years breeding by many farmers a car of such stock cannot be bought in the country today at any one place. Good, hearty general purpose and driving stock we are raising, but when solid weight is wanted, either we are trying in the wrong place, or we don't know our business as breeders of draft horses. Mr. Nichol had also a well-planned windbreak a few years old that Mr. Stevenson readily made note of.

At Rapid City we talked on tree and fruit growing and wheat growing, and spent the night with Mr. McNaught, M. P., where we saw one proof of the progressiveness of the age. His pigs, of which he has always a good few, have all an up-stairs bedroom, clean and dry, to which they retire every night. They feed and dig on the ground floor, and go up a gangway to bed. I am assured that the best seed oats in the country will this spring be found at Rapid City.

At Oak River the secretary lives too far from town, but still contrived to get together a meeting. At Hamiota there should have been a better meeting than we had and I do not blame the secretary for it, though I met some who would have been with us had they known. The roads were wretched, and a clever fakir did not draw any bigger a meeting at night to a free entertainment than we did in the daytime. Mr. Middleton, the secretary, made up for the middling attendance by giving a very good report of our meeting in his paper, the Hamiota Hustler.

At Arrow River some people expected us in the afternoon and some in the evening, and we decided to hold forth twice. We had a very full meeting at night, nearly all the young folks in the settlement were on hand. We had a very interesting discussion in the afternoon on cultivation and manuring. Mr. Howard told us he has managed better with a Randal harrow in breaking up rough manure than with any other implement. There is no time to fuss over manure in this country, and I am satisfied that for most purposes it is best to spread it in winter as it is made, if we can get it on the land. The trouble is to spread it, and if by rough spreading in winter and breaking up in the spring before the ground gets too soft, we can distribute it properly, it is a great point gained. An ordinary harrow gets clogged with the straw of rough manure, and I wait to see if Mr. Howard's plan can be beaten. I look on this first meeting at Arrow River as a model for all our institutes. My hearers had facts to tell and hints to offer, the very things needed at all such meetings.

On our road from Hamiota to Bradwardine we had a peep into the barns of George Rankin and his brother-in-law, John Riddell. They were visited in summer by a well-grown cyclone that smashed Mr. Rankin's new barn and unroofed a good portion of Mr. Riddell's buildings, besides threshing out half their crop. But I wish all my friends were as well fixed as my two old chums from Gala water and their capable families. They have good examples of every kind of stock, but either

last season was extra poor for sheep, or they have more Leicester blood in the young stock than is profitable and spear grass also was extra hard on them.

At Bradwardine next day we had another very gratifying meeting. The president had just gone east, and the worthy secretary, Mr. George Glendenning, was ill, but Mr. Parr, who filled the chair, is a host in himself and we had a good household of the right sort—many young lads. I have always great satisfaction in my visits to Bradwardine and Arrow River, and wish we had a score more of such institutes before winter closes. In another place will be found the cream of Mr. Stevenson's discourse which was full of interest, mainly because the ripe fruit of many years careful practice of what he teaches. I can heartily testify to the high quality of Mr. Stevenson's work on his own farm, with which for a dozen of years I have been familiar. More of Mr. Stevenson, and a great deal less of the average tree peddler, would have been a pot of money in the pockets of our farmers today. R. W. M.

SCRIBNER'S MAGAZINE

A Red Letter Year for 1897

THE ENTIRE NOVELTY of many of the plans for 1897 is noticeable. For instance, the series devoted to

"LONDON AS SEEN BY CHARLES DANA GIBSON." Mr. Gibson has not before appeared as a writer. He visited London last summer for SCRIBNER'S MAGAZINE, for the purpose of depicting with pen and pencil those scenes and types which the huge metropolis presents in endless variety.

Of like novelty is the first considerable **NOVEL BY RICHARD HARDING DAVIS, "Soldiers of Fortune."** The hero is one of the most vigorous men that Mr. Davis has drawn. Illustrated by C. D. Gibson.

"THE CONDUCT OF GREAT BUSINESSES." A beautifully illustrated series of articles of which the following are already completed:
"The Great Department Store."
"The Management of a Great Hotel."
"The Working of the Bank."
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Judge Henry E. Howland writes on "Undergraduate Life at Yale."
Mr. James Alexander on "Princeton," and Robert Grant and Edward S. Martin on "Harvard."

"JAPAN AND CHINA SINCE THE WAR" will be a most interesting group of articles richly illustrated.

"THE UNQUIET SEX." Under the title of "The Unquiet Sex," Mrs. Helen Watterson Moody will write a series of articles:—"Woman and Reforms," "The College Bred Woman," "Woman's Clubs," and "The Case of Maria" (a paper on domestic service).

W. D. HOWELL'S "STORY OF A PLAY." In this Mr. Howells gives us the best novel he has ever produced in his delightful vein of light comedy.

GEORGE W. CABLE. In addition to the fiction enumerated there will be a series of four short stories by George W. Cable, the only ones he has written for many years.

HOW TO TRAVEL WISELY with a minimum of wear and tear must be regarded as an art little understood. **Mr. Lewis Morris Iddings**, in two articles, will offer a variety of useful suggestions and data on "**Ocean and Land Travel.**" This will be happily rounded out by an article from **Mr. Richard Harding Davis** on "**Travelers One Meets.**" Their Ways and Methods." The illustrations by American and foreign artists will be highly pertinent.

* * * It is impossible in a small space to even mention the many attractive features for 1897. A beautiful illustrated booklet has been prepared, which will be sent, postage paid, on request.

Scribner's Magazine \$3.00 a year
25 cents a copy

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Thy Will Be Done.

We see not ; know not ; all our way
Is night ; with Thee alone is day.
From out the torrent's troubled drift,
Above the storm our prayers we lift—
Thy will be done !

The flesh may fail, the heart may break,
But who are we, complaint to make,
Or dare to plead in times like these,
The weakness of our love for ease ?
Thy will be done !

We take with solemn thankfulness
Our burden up, nor ask it less ;
And count it joy that even we
May suffer, serve, or wait for Thee.
Thy will be done !

Though dim as yet in tint and line,
We trace Thy picture's wise design,
And thank Thee that our age supplies
The dark relief of sacrifice.
Thy will be done !

Strike, Thou, the Master, we the keys,
The anthem of the destinies ;
The minor of Thy loftiest strain—
Our hearts shall breathe the old refrain,
Thy will be done !
—John G. Whittier.

The ripening maple leaf
Doth wear no sombre panoply of grief,
But to the sky doth hold
The scarlet and the gold,
Rejoicing that the finished leaf can bear
The life of many summers shining there.
When leaves fall fast,
The brightest sometimes reach the earth
the last.

The ripening of the years—
Why should it wear the sombreness of
tears ?

Love, art thou growing old ?
The scarlet and the gold
Of life's October, may they still be thine,
And all sweet summers on thy forehead
shine,
Till thou art found
More beautiful, as thou dost touch the
ground.

Lord Bacon wisely said : "Let states
that aim at greatness take heed how their
nobility and gentlemen do not multiply
too fast, for that maketh the common sub-
ject grow to be a peasant and a base
swine, driven out of heart, and in the end
but a gentlemen's laborer."

Patents for homesteads must be taken
out within five years from date of entry
for the same, is the department's ruling in
that matter. Failure to take out the
patent within that time renders the home-
steader's right liable to forfeiture in the
discretion of the Minister of the Interior.

Denmark is not always quite careful of
the reputation of its butter. At the police
court of Birmingham, England, a grocer
was charged with selling adulterated but-
ter. It was from Copenhagen, and the
dealer was fined, though there was little
doubt that he bought it believing it to be
pure.

Most cellars are not only too warm, but
too damp. The latter evil is easily reme-
died by putting a few lumps of unslaked
lime in various parts of the cellar, where
it will absorb the surplus moisture. It
will also help to absorb the odors of de-
caying vegetables which are held in the
moisture of the air, which is sweetened
when they are removed. To keep roots
in cellars, some dirt should be thrown
over and sifted among them. This will
also protect them from being frozen, if
the cold weather causes the thermometer
to sink below the temperature for freezing.

Ladies' Home Journal for 1897.

An even excellence makes the good
things which The Ladies' Home Journal
promises unusually interesting and strong.
The list is long and sturdy. One series of
papers alone would sell the magazine :
that is the three White House articles
which ex-President Harrison is to write.
No man has ever done what General
Harrison will do in these articles : show
us what "A Day With the President at
His Desk" means in one article ; in an-
other tell of "The Social Life of the Pres-
ident," and in a third article describe "Up-
stairs Life in the White House." Each
of the articles will be profusely illustrated.
Another series equally fascinating is the
one called "Great Personal Events," in
which some of the greatest enthusiasms
which have occurred in America will be
revived : those wonderful times when
Louis Kossuth rode up Broadway ; when
the young Prince of Wales was here ;
when Jenny Lind sang in Castle Garden ;
when Henry Ward Beecher electrified his
congregation by selling slaves in his pul-
pit ; when Grant went round the world ;
when Henry Clay bade farewell to the
senate ; when John Wesley preached in
Georgia, of which so few know. All
these memorable events and others will
be vividly recalled, told more graphically
than ever before, and illustrated with pic-
tures which have occupied twelve artists
for over a year. A third series is unique
and valuable from the fact that it will give
women scores of ideas for their homes.
It will reveal what there is "Inside of a
Hundred American Homes," and carefully
reproduce pictures of one hundred com-
pletely furnished rooms in homes in this
country—from Maine to California—
where taste has gone farther than money.
Two new department writers have also
been exclusively engaged by the Journal :
Mrs. S. T. Rorer, who will hereafter have
entire charge of the domestic department
and give a series of cooking lessons, and
Dwight L. Moody, the famous evangelist,
who is to put the result of his life study
of the Bible in a department entitled "Mr.
Moody's Bible Class." The artist, Chas.
Dana Gibson, who created the Gibson girl,
will present six full-page pictures showing
"The People of Dickens," while Alice
Barber Stephens will alternate with Mr.
Gibson and present her idea of "Six Types
of American Womanhood," showing the
American woman in society, in religion,
in business, in summer, in the home, and
as a mother. Mary E. Wilkins the New
England writer, will revive the old quilting
party, the ancient singing school and the
apple-paring bee in "The Pleasures of
Our Neighborhood." Sir Henry Irving
is to tell how to study, read and present
"Shakespeare in Small Communities." Tosti,
the song writer, will give his first piano
composition. Sir Arthur Sullivan
is to present the first true and correct copy
of "The Lost Chord" ever printed in Amer-
ica. Reginald DeKoven, John Philip
Sousa and Jakobowski (who wrote "Er-
minie"), have each written a waltz, while
Ira D. Sankey has composed a hymn
which he considers greater than his fam-
ous "Ninety and Nine." Ian Maclaren
will have a story, while Herbert D. Ward's
humorous serial, "The Burglar Who Moved
Paradise," will run through the year,
followed by Hamlin Garland's new novel-
ette, "The Spirit of Sweetwater." Jenny
Lind's daughter is to sketch "My Mother
as I Recall Her," while George W. Smalley
is to show "The Personal Side of Bis-
marck and the Personal Side of the
Prince of Wales" in two lavishly-illustrat-
ed articles. Altogether, no magazine
gives a list of attractions so interesting and
promising as does The Ladies' Home
Journal, and certainly no periodical does
it, as does the Journal, for only one dol-

lar per year. If it has become a fad, as it
seems, for every girl and woman to take
this magazine, it is an excellent one, and,
unlike many other fads, a sensible one.
The Journal is published by The Curtis
Publishing Company, of Philadelphia, Pa.
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In 1897

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pated with all the zeal and power at its command in
the great political events of the most interesting and
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pose, as these have been manifested principally in
its editorial pages, it will continue to be.

It is impossible to announce with precision all that
the WEEKLY will contain during the year 1897. It
were as easy to announce what is about to happen in
the world, what triumphs for good government
are to be won, what advances of the people are to
be made, what is to be the outcome of the continuous
struggle between the spirits of war and peace,
what is to happen in the far East, what is to be the
state of Europe twelve months hence, what new
marvels of science are to be revealed, or what are
to be the achievements of arts and letters, for
the WEEKLY is to be a pictorial record of all this.

Cartoons will continue to be a feature.
Serial Stories. A New England story by Miss
Mary E. Wilkins, will begin in January. A tale of a
Greek uprising against the Turks, by Mr. E. F. Ben-
son, the author of "Dodo," will follow. A sequel to
"The House-Boat on the Styx," by Mr. John Ken-
drick Bangs, illustrated by Mr. Peter Newell.

More **Short Stories** will appear in the WEEKLY
than it has been possible to publish during 1896.

Departments: Mr. W. D. Howell's "Life and
Letters" have been among the most charming fea-
tures of periodical literature ; Mr. E. S. Martin and
others will contribute observations on what is going
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